

**Information to Support a
No Existing Use Determination
During Selected Storm Events for
CSO-Impacted Portions of Marion County Streams**

**Revised Submittal
Prepared by
Indianapolis Clean Stream Team
Indianapolis Department of Public Works
March 25, 2004**

Executive Summary

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The City of Indianapolis is seeking a modification or temporary suspension of water quality standards for *E. coli* bacteria for combined sewer overflows (CSOs) that will occur after implementation of its long-term control plan. This modification would apply only during infrequent, large storm events that exceed the capacity of CSO control facilities and cause untreated overflows to occur.

The City of Indianapolis is revising its April 2001 long-term control plan for reducing combined sewer overflows to Marion County streams. Once completed and approved by the U.S. Environmental Protection Agency (U.S. EPA) and Indiana Department of Environmental Management (IDEM), the plan will dramatically reduce the frequency and duration of combined sewer overflows and significantly reduce the volume of raw sewage flowing into neighborhood streams and the White River.

Although water quality will improve dramatically and overflows will be reduced significantly from the current average of 60 events per year, the city cannot completely eliminate sewer overflows because some storms inevitably will be too large for the facilities that we will build under our long-term control plan.

U.S. EPA and IDEM have recognized that CSO communities may seek to revise or temporarily suspend water quality standards to reflect wet weather impacts of CSOs and to define an attainable goal for CSO-impacted waterways. The City of Indianapolis is one of those communities.

Under federal regulations at 40 CFR 131.3(e), a water body's designated use cannot be removed if it is an "existing use," defined as a "use *actually attained* in the water body on or after November 28, 1975." (Emphasis added.) Before finalizing its long-term control plan and applying for a change to the water quality standards, however, the city must obtain a determination from the state that there are no "existing uses" of these waterways during specific storm events that are likely to cause overflows following full implementation of the LTCP.

The City of Indianapolis has collected data to demonstrate that there is no existing full-body or partial-body contact recreational use, as defined in 40 CFR 131.3(e), within CSO-impacted waterways. This demonstration is based upon the following reasons:

- Recreational activities (such as swimming and wading) are not known to occur during storm events, such as those exceeding a 1.7-month storm.
- CSO-impacted waterways are unsuitable for recreational use during and following large storm events due to high *E. coli* bacteria levels and high stream flows.
- The city has implemented a proactive and effective public outreach program to prevent and control access to waterways during and after wet weather events.

The city's reasoning and data collection are consistent with the principles stated in IDEM's 2001 guidance on CSO long-term control planning and use attainability analyses, as demonstrated in the documents that follow.

Executive Summary

Recreational Use Doesn't Occur During Large Storms

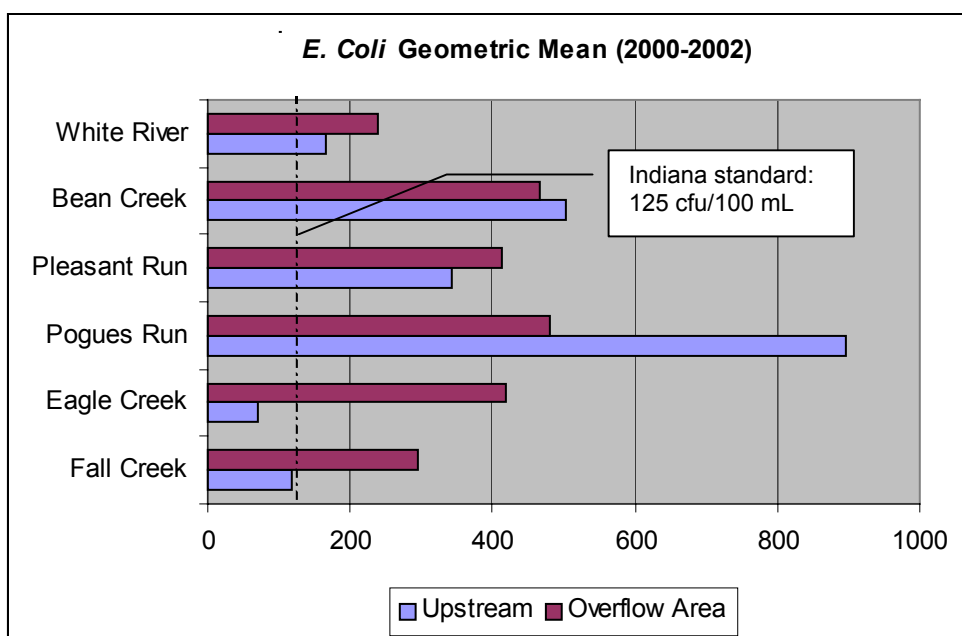
The city used extensive surveys and other public participation methods to gather information on the extent and frequency of water recreation activities in and along CSO-impacted streams. Based upon this information, the city identified a number of locations where recreational uses do occur. According to people who live along and near these streams, the primary use of CSO-impacted waterways is walking, jogging and/or biking along the greenways adjoining the streams. Swimming, wading and other water-contact activities are reported much less frequently, if at all. There are no public or private bathing beaches along any CSO-impacted waterways.

Where recreational activities do occur, survey results demonstrate that people are more likely to recreate in dry weather or after a light rain than a major storm. The evidence collected by the city indicates that recreational use is extremely rare or non-existent during large storm events.

Waters Are Unsuitable for Recreational Use During Large Storms

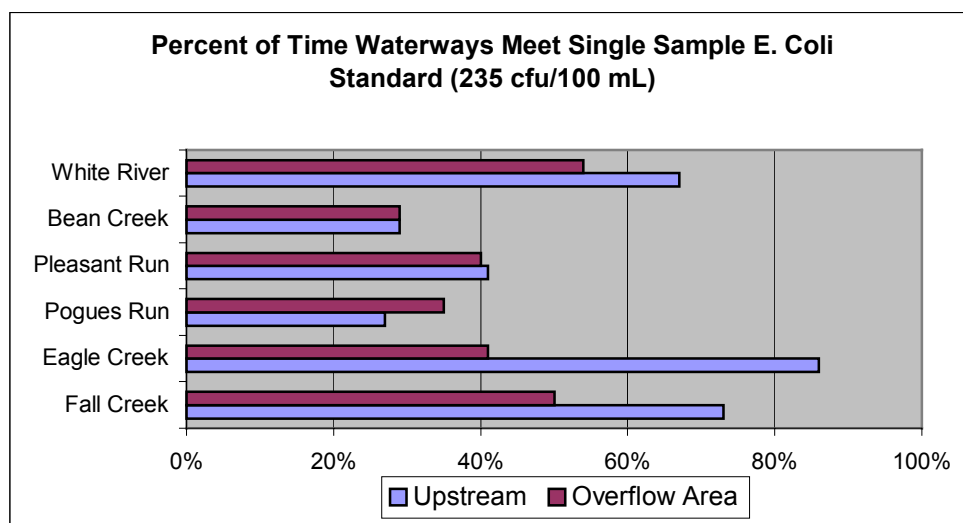
Under current conditions, Marion County waters affected by CSOs do not always meet in-stream *E. coli* bacteria standards established to protect recreational uses. While the city's long-term control plan is expected to significantly reduce bacteria levels during and after storm events, no level of CSO control will attain the recreational standard 100 percent of the time.

The graph below demonstrates that CSO-impacted waterways do not meet Indiana's *E. coli* geometric mean standard for recreational uses, based upon samples collected from 2000-2002 by the Indianapolis Office of Environmental Services and the Marion County Health Department. Only Fall Creek above the CSO area and Eagle Creek above the CSO area meet the standard of 125 cfu/100 mL. Within the CSO area, no stream meets the geometric mean standard established to protect water contact recreation. When the city submits its Use Attainability Analysis, it will demonstrate that while the long-term control plan's implementation is expected to improve the geometric mean, these waterways will still not meet the 125 standard.



Executive Summary

The graph below demonstrates that CSO-impacted waterways do not meet the single sample maximum *E. coli* standard of 235 cfu/100 mL, based upon the same OES/MCHD sampling data collected from 2000-2002. In fact, the data reveal substantial wet weather bacteria impairments upstream of the CSO areas, as well as within CSO areas. A finding of “no existing use” during large storm events on CSO-impacted streams will enable Indianapolis to devote more resources toward addressing non-CSO bacteria sources in these upstream areas. These sources cause impairments much more frequently than the handful of large storms that will cause overflows during and following implementation of a cost-effective long-term control plan. When the city submits its Use Attainability Analysis, it will demonstrate that while the long-term control plan and other water quality improvements are expected to increase the percent of time these waterways meet the single sample *E. coli* standard, these waterways will not meet the standard following CSO events.



Currently, *E. coli* standards are *never* met during the large storm events that will cause untreated overflows following implementation of a cost-effective long-term control plan. Where the city was able to correlate existing in-stream sampling data with large storm events from 2000-2002, the streams consistently were above the *E. coli* single sample maximum standard, as shown in the table below. Based upon a NetStorm simulation of LTCP Systemwide Control Plan 1, the city identified 17 storm events that would have resulted in untreated overflows if the city had installed CSO control facilities to achieve 93 percent capture. The city does not have data to correlate to all 17 storm events, since the OES/MCHD sampling program is designed to collect data on a periodic basis without regard to weather conditions. However, when data was collected that correlated to an estimated overflow event, the single sample maximum standard consistently was not met. Further data supporting these conclusions is provided in documentation for each stream.

Executive Summary

Comparison of Estimated Overflow Events and Historic E. coli Sampling Data, 2000-2002

<i>E. coli</i> bacteria sampling average (cfu/100 mL) within CSO Area							
Estimated Overflow Event Date	Date of Sample	Fall Creek	Eagle Creek	Pogues Run	Pleasant Run	Bean Creek	White River
4/7/2000	4/7/2000	48,200	N/A	1,800	N/A	N/A	N/A
5/26/2000	No samples obtained that correlate to this rain event.						
7/4/2000	7/5/2000	5,200	N/A	6,600	N/A	N/A	10,300
8/17/2000	No samples obtained that correlate to this rain event.						
9/10/2000	9/11/2000	N/A	N/A	N/A	5,300	N/A	N/A
10/4/2000	10/4/2000	N/A	N/A	N/A	N/A	N/A	900
10/4/2000	10/5/2000	N/A	84,000 ²	54,500	N/A	120,000	N/A
6/5/2001	6/5/2001	2,100	N/A	3,700	N/A	N/A	N/A
6/5/2001	6/6/2001	N/A	N/A	N/A	72,300	N/A	N/A
7/1/2001 ¹	7/2/2001	N/A	13,300	N/A	24,500	N/A	N/A
10/10/01	No samples obtained that correlate to this rain event.						
10/24/2001 ¹	No samples obtained that correlate to this rain event.						
4/21/2002 ¹	No samples obtained that correlate to this rain event.						
4/24/2002	No samples obtained that correlate to this rain event.						
4/27/2002	No samples obtained that correlate to this rain event.						
5/7/2002	5/7/2002	2900	N/A	N/A	N/A	N/A	N/A
5/12/2002	5/13/2002	N/A	N/A	N/A	6,000	3,200	N/A
9/20/2002	No samples obtained that correlate to this rain event.						
11/10/2002 ¹	No samples obtained that correlate to this rain event.						

Source: Estimated Overflow Dates: 1950-2003 NetSTORM Simulation for System Wide Plan 1, 93% and 95% Capture Level of Control.

Sampling Data: 2000 - 2002 instream *E. coli* bacteria sampling by OES and MCHD.

Notes:

1. Overflow events that would occur at 93% Capture only.
2. The Eagle Creek value on 10/5/2000 represents a single sample and not an average of several samples.
3. Sampling data is presented only for wet-weather samples taken on or following the estimated overflow event date, and for locations within the CSO area.
4. The 10/4/2000 and 6/5/2001 overflow event dates are shown on two rows because samples were collected on two different days that could be correlated to those events.

The city maintains that these types of storm events would have caused overflow events both before and after November 28, 1975, the date after which an existing use must be protected if it has been “attained.”

In addition, the city has demonstrated in the attached documentation that stream flows are extremely high and unsafe for recreational use during wet weather events exceeding a 1.7-month storm, as shown in the table below. This storm was chosen as an example large storm that might not be controlled by the city’s long-term control plan. Similar conditions in terms of flow, water quality, etc. would result from 2-month, 3-month or larger storms.

Modeled Maximum Stream Flow in CSO-Impacted Areas of Marion County Streams

	3-month storm	1.7-month storm
Fall Creek	500-685 cfs	360-535 cfs
Eagle Creek	620-645 cfs	465-485 cfs
Pogues Run	340-565 cfs	260-440 cfs
Pleasant Run	415-510 cfs	280-395 cfs
White River	595-2550 cfs	440-2000 cfs

Executive Summary

Therefore, the physical and water quality conditions of CSO-impacted waterways make primary and secondary contact recreational activities unsuitable, undesirable, and unsafe during significant wet weather events.

City Programs Prevent and Control Access to Waterways

The city's programs to prevent and control use of CSO-affected waterways include legal barriers to use, warning signs, public notification and education programs, and capital investments in safer water recreation alternatives. These programs are described in more detail in the documentation that follows. Together, they represent an aggressive and proactive outreach/educational program to prevent and control both adults and children from using CSO-impacted waterways during and immediately following a significant wet weather event. In recent comments after a review of the city's program, U.S. EPA's Region V office complimented the city for providing a "good, solid program" that provides multiple pathways for disseminating information to the public and that includes bilingual signs with graphics and warnings about sewage. Since at least 1975, the city's policy, practice and law have worked together to prevent, control and discourage public contact with waters impacted by CSOs. The city has strengthened its efforts in recent years to prevent and control public access to its waterways, and will continue to operate and improve such programs in the future. After LTCP controls are in place, the city is willing to take reasonable steps to prevent access to areas where full-body or partial-body contact may occur shortly after large storms that cause sewage overflows.

Conclusion

Based upon the data collected, the City of Indianapolis concludes that full-body and partial-body contact recreation has not been attained as an existing use under 40 CFR 131.3(e) during storm events exceeding the 1.7-month storm. Therefore, we request that IDEM affirm the city's conclusion and allow the city to proceed with a UAA to evaluate the attainable uses of CSO-impacted streams during the periods and conditions under which we contemplate having residual overflow events.

Introduction

Introduction

The City of Indianapolis is revising its April 2001 Long-Term Control Plan for reducing combined sewer overflows to Marion County streams. Once completed and approved by the U.S. Environmental Protection Agency (U.S. EPA) and Indiana Department of Environmental Management (IDEM), the plan will dramatically reduce the frequency and duration of combined sewer overflows and significantly reduce the volume of raw sewage flowing into neighborhood streams and the White River.

In October 2004, the city sought public input on three systemwide plans. These plan options were: storage/conveyance facilities with central treatment, storage/conveyance with some remote treatment, or total sewer separation. The city's chosen plan of storage/conveyance facilities with central treatment will be combined with sewer separation in isolated areas, improved stormwater management, conversion of neighborhoods on septic systems to sewers, and stream corridor restoration as the city adopts an integrated watershed approach to improving water quality. The plan also will include expansion projects at the Belmont and Southport Advanced Wastewater Treatment Plants to enable the plants to treat more flows during and after wet weather.

A critical question in preparing the long-term control plan is the recommended size of storage tunnels, tanks and on-site treatment facilities. The larger the facilities, the more sewage and stormwater they will capture and the fewer times overflows will occur. However, as size increases, so does the cost. The city, in conjunction with the community, is seeking consensus behind a plan that will best protect public health and the environment in an affordable and cost-effective way. Although water quality will improve dramatically and overflows will be reduced significantly from the current average of 60 events per year, the city cannot completely eliminate sewer overflows because some storms inevitably will be too large for the storage and/or treatment facilities.

Both federal and state legislation, regulations, policy and guidance anticipate the need of many combined sewer overflow (CSO) communities to revise or temporarily suspend water quality standards to reflect wet weather impacts of CSOs.

- U.S. EPA's July 2001 guidance on "Coordinating CSO Long-Term Planning with Water Quality Standards Review" states that EPA's goal "is for CSO communities to develop and implement cost-effective [long-term control plans] that achieve compliance with applicable water quality standards and with other [Clean Water Act] requirements, and *for states to review and revise water quality standards as appropriate to ensure they are attainable.*" (Emphasis added.)
- Senate Enrolled Act 431, enacted by the Indiana General Assembly in 2000, provides that designated uses and associated water quality standards would be temporarily suspended for waters affected by discharges from CSOs if specific conditions are met, including preparation of a Use Attainability Analysis (UAA).
- Senate Bill 620, currently under consideration in the General Assembly, would create a limited recreational use subcategory for CSO-impacted waterways.

Currently, Marion County waters affected by CSOs do not meet *E. coli* bacteria standards established to protect recreational uses at all times. Furthermore, no level of CSO control will attain the recreational standard 100 percent of the time. Some storms would always be too large for the control facilities to capture all flows, unless all sewers were separated. Furthermore, other sources do currently and will continue to prevent Indianapolis streams from meeting the bacteria standards, even during storms in which CSOs are fully captured and treated.

Introduction

Sewer separation would reduce the loading of *E. coli* bacteria caused by CSOs. However, the reductions in CSO discharges would be offset by increases in stormwater bacteria discharges. Thus, complete sewer separation will not eliminate bacteria loadings to the streams. Therefore, Indianapolis waterways still would not attain recreational standards during wet weather. Sewer separation would cost an estimated \$6.2 billion, or an additional \$119 per month for the average household – greater than 2 percent of the median household income of the sewer service area. Sewer separation also would result in more frequent urban stormwater discharges of a greater magnitude than streams currently experience.

The City of Indianapolis desires IDEM and EPA approval of an aggressive, cost-effective long-term control plan that will provide a high level of CSO control. However, for the few residual overflows that remain, the city will seek a temporary suspension of water quality standards associated with *E. coli* bacteria or a limited use recreation subcategory, as authorized under state law. To obtain a temporary suspension, subcategory or other modification to the designated use, the city must prepare and gain approval of a Use Attainability Analysis (UAA). The UAA will seek to modify water quality standards for *E. coli* bacteria for overflows that will occur after implementation of the city's long-term control plan.

Under federal regulations, a designated use cannot be removed if it is an existing use, defined as a “use *actually attained* in the water body on or after November 28, 1975.” (Emphasis added.) The State of Indiana is responsible for making the existing use determination.

This submittal provides data and information that would allow IDEM and the Indiana Water Pollution Control Board to make a “no existing use” determination for primary and secondary contact recreation during storm events exceeding the 1.7-month storm. The determination would apply to CSO-impacted portions of affected waterways, based upon the principles stated in IDEM's September 2001 guidance. If a determination of “no existing use” during these storm events is made, Indianapolis will proceed with a Use Attainability Analysis to determine what uses are attainable on CSO-impacted streams during wet weather.

Existing Use Requirements

Federal Requirements: The Clean Water Act sets forth that “wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water be achieved.” Federal regulations describe the requirements and procedures for “developing, reviewing, revising, and approving water quality standards” by the states. A state must conduct a Use Attainability Analysis (UAA) whenever the state wishes to remove a designated use that is specified in Section 101(2)(2) of the Clean Water Act. 40 CFR § 131.10(j). A UAA is “a structured scientific assessment of the factors affecting the attainment of the use which may include physical, chemical, biological, and economic factors as described in Sec. 131.10(g).” 40 CFR 131.3(g). However, a state may remove a designated use from its water quality standards only if the designated use is not an existing use. 40 CFR 131.10(g) and (h)(1).

“Existing uses” are defined as “those uses *actually attained* in the water body on or after November 28, 1975, whether or not they are included in the water quality standards.” 40 CFR 131.3(e). This federal regulation does not specify how to determine whether a use has been “actually attained.”

Introduction

State Requirements: During its 2000 session, the Indiana General Assembly approved Senate Enrolled Act 431, which was signed into law by Gov. Frank O'Bannon on March 17, 2000. Section 20(a) of the statute provides that "designated uses and associated water quality criteria are temporarily suspended on a site specific basis, for waters affected by discharges from combined sewer overflow points listed in the National Pollutant Discharge Elimination System (NPDES) permit due to wet weather events," if specific conditions are met, including the federal requirements relating to the UAA process. *See* IC 13-18-3-2.5(a).

IDEM issued its final *Combined Sewer Overflow Long Term Control Plan and Use Attainability Analysis Guidance* (IDEM guidance) on September 19, 2001, which became effective on December 14, 2001. IDEM's guidance identifies the steps that must be followed to apply for, obtain and maintain a temporary suspension of a designated use. In the first step, IDEM must determine if a designated use is an existing use, using information provided by a community through the UAA process. The guidance notes that:

Remembering that an "existing use" cannot be removed, suspended, or otherwise modified, unless modified to make it more protective, it is important that IDEM determines, with input from the community what existing uses may apply to their water bodies. IDEM will determine that a use exists if the use is or has been "actually attained" or the water quality necessary to support the use is in place even if the use, itself, is not currently established, as long as other non-water quality related factors would not prohibit the use. Any decision regarding whether recreational uses are an "existing use" must be a water body-specific determination. (IDEM guidance, p. 1)

The IDEM guidance also recognizes that "a recreational use that has occurred on or after November 29, 1975, may not have occurred 365 days each year. For example, people are unlikely to be engaging in recreational activity in the water during the winter or during severe storm events. Therefore, there may be specific time periods when IDEM will not consider a water body to have an existing recreational use." (IDEM guidance, pp. 50-51.)

IDEM guidance further notes that physical conditions, water hazards and steps taken by a municipality to prevent and control recreational use may affect the existing use determination for a specific waterway. (IDEM guidance, p. 51.)

Factors for Determining a Recreational Use

IDEM guidance establishes that an existing use determination must be made on a case-by-case basis. The guidance indicates that although actual recreational uses may occur, other factors may preclude an existing use determination. Based upon principles set forth in IDEM guidance, an actual recreational use may not be an existing use based upon a review of the following factors:

1. Lack of proximity to residential neighborhoods, parks and schools and/or presence of physical hazards, access, flow or substrate that make such areas unsuitable for recreational use;
2. Waters that are dangerous due to physical hazards such as swift currents, rapids, dams or shipping traffic;
3. Limited extent of actual recreational uses;
4. Limited extent of recreational use during or immediately after a significant wet weather event; or

Introduction

5. Unsafe water quality combined with municipal programs to prevent and control access to the water.

Information supporting conditions 1-4 are provided in attached documents for each CSO-impacted watershed in Marion County: Fall Creek, Eagle Creek, Pogues Run, Pleasant Run/Bean Creek and White River. Because some information relating to the fifth condition is not watershed-specific, information describing the city's programs to prevent and control access to the water is provided below.

5. Unsafe water quality combined with municipal programs that prevent and control access to the water.

IDEM guidance notes that water quality unsafe for recreational uses and municipal programs to prevent and control access may be a factor in determining an existing use:

If the water quality is unsafe and access to the water is precluded by (a) existing impediments to physical access such as steep banks, fencing or high retaining walls, then IDEM will not presume an existing recreational use. In order for IDEM to determine that access is precluded by the municipality, the municipality must take steps to actively prevent adults and children from actually using the water. This requires the municipality to prevent and control access to the water and to conduct a reasonable proactive outreach media and educational program to prevent actual use during and immediately following a significant wet weather event. This presumption will not apply to recreational beaches open to the public and other swimming areas designated for public recreation. (IDEM guidance, p. 51.)

Water Quality: See documentation for each watershed.

Municipal Programs to Prevent and Control Access: The city's programs to prevent and control use of CSO-affected waterways include legal barriers to use, warning signs, public notification and education programs, and capital investments in safer water recreation alternatives. These programs are described below:

a) Legal barriers to use. The City of Indianapolis historically has recognized the poor quality of its streams and the associated potential for the transmission of various diseases. In 1975, the city adopted an ordinance that prohibited swimming in most waterways in Marion County, including all streams in the combined sewer area. The ordinance states, "It shall be unlawful for any person to fish, bathe, wash, operate boats in or enter any public waterways, or to send, drive or ride any animal into any public waterways, where not authorized for such purposes." (Code 1975, Sec. 7-21) In addition, as late as 1996, the Health and Hospital Corporation of Marion County passed an ordinance prohibiting full-body and partial-body contact recreation in the CSO area stating that public swimming or wading beaches "shall not be located in areas subject to pollution by sewage." (Gen. Ord. 8-1996(A)) Thus, swimming is prohibited by ordinance in all CSO-impacted waterways in Marion County. These ordinances are provided in Appendix E.

Both the Indianapolis Police Department and Indy Parks law enforcement officers enforce these ordinances by ordering violators out of the waterways, or, in some instances, issuing a citation.

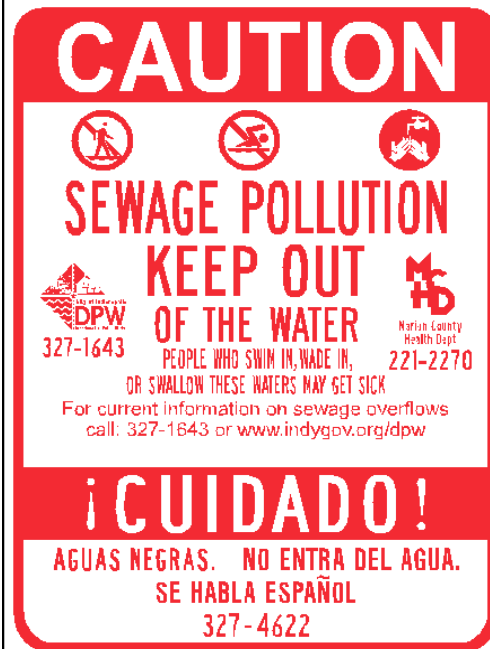
b) Warning signs about sewage pollution. The city and the Marion County Health Department have installed more than 230 warning signs at all CSO outfalls and at public access points to the waterways. The first signs were posted in the 1990s at CSO outfalls and locations where

Introduction

recreational activities were known to occur. New signs were posted in 2003 in additional locations. The public access signs warn citizens of sewage pollution and that swimming and wading are not permitted. Signs include both English and Spanish warnings. The city evaluated 180 areas for signs, including schools, bridges, boat docks, boat ramps, canoe launches and other public access areas located on or adjacent to affected waters. Criteria for determining locations of warning signs were ease and ability to access affected waters, ownership of the land, presence of and distance to an existing sign, and ability to inform the greatest number of people. Additional information on the warning signs is included in the city's CSO Public Notification Program Standard Operating Procedures, included as Appendix F.

c) Public notification program. In response to requests from the public, the City of Indianapolis developed a CSO public notification program in 2002. This program was the first of its kind in the state and was implemented prior to the Water Pollution Control Board's passage of a rule requiring such programs in all CSO communities. The overall objective and goal of the city's CSO Public Notification Program is to:

- Notify affected and interested persons when sewage overflows are likely to occur;
- Educate affected and interested persons as to the health hazards and impacts associated with sewage in our waterways;
- Enable affected and interested persons to take the appropriate steps to protect themselves from hazards associated with sewage in waterways; and
- Comply with 327 IAC 5-2.1 (Combined Sewer Overflow Public Notification Rule).



The city's Wet Weather Technical Advisory Committee (WWTAC) was involved in developing the public notification plan. The WWTAC was encouraged to take information about the program back to their respective organizations, which include industry, the Marion County Health Department, Improving Kid's Environment, the Audubon Society, Sierra Club, and Friends of the White River.

The program includes daily monitoring of weather reports, e-mail notification, a telephone hotline, a warning on government access television station and reports to IDEM on monthly Discharge Monitoring Reports. Interested parties can sign up for the e-mail listserve via the city's Web site at <http://www.indygov.org/dpw>. Further, the telephone hotline can be called 24 hours a day to obtain current information on current or impending sewage overflows. The hotline number (327-1643) is included on the signs posted at parks and other public access points.

The city notified citizens of the CSO public notification program through public meetings, the city's Web site, letters to more than 500 neighborhood associations and community groups, and a water bill insert that reached roughly 242,000 households. The city took notification efforts one step further by sending letters to schools, downstream communities and appropriate government organizations. In all, the city mailed program information to approximately 670 schools, day care

Introduction

centers and day ministries; six downstream health departments; seven county parks departments and/or government offices; three DNR district headquarters; and one downstream state park.

d) Additional public education programs. In addition to prohibiting stream use through its ordinance, the city discourages the public from recreating in urban waters through extensive public education programs. Since the late 1990s, public outreach has been conducted in the following phases:

Phase I: Formation of the Wet Weather Technical Advisory Committee (1996). This committee is composed of technical experts and community activists with an interest in water quality and wet weather issues. It has provided continuing involvement of key stakeholders and professionals in the city's analysis of stream conditions and control alternatives. The committee also advised the city in the development of its first public education program on water quality issues, known as WaterWise.

Phase II: Formation of Mayor's Raw Sewage Overflow Advisory Committee and public education/input sessions (2000). The mayor's committee is composed of a broad cross-section of the community, including business leaders, environmental activists, neighborhood representatives, and representatives of legal, financial, engineering, construction, labor and other professions. It guided the city as it conducted an extensive series of public education meetings in 2000, followed by public input sessions throughout the community. The committee analyzed the input received and provided recommendations to the mayor on how to proceed in developing the long-term control plan. The public meetings were televised on the local government cable channel and covered in the local news media.

Phase III: Publication of draft long-term control plan and 30-day public comment period and public hearing (2001). The city's draft plan was distributed widely in the community and comments were accepted in writing, via the city's Web site or telephone hotline, and at a public hearing. These activities were covered by the local news media.

Phase IV: Stream use survey and neighborhood outreach meetings to identify ways in which residents use CSO-impacted waterways in Marion County (2002). The city conducted non-random intercept surveys followed by neighborhood meetings to collect information from stream users, neighborhood leaders and environmental and recreational groups. These meetings also provided an opportunity to educate the public about sewage pollution.

Phase V: Creation of the Indianapolis Clean Stream Team public outreach and education program (2003). This comprehensive outreach program is designed to build public support and understanding of CSO and other water quality issues. The program utilizes a variety of methods and materials to inform citizens about progress toward addressing raw sewage overflows. Activities have included display booths at Earth Day and other community events, an 8-minute educational video aired on Channel 16 and distributed to area schools, program and project fact sheets, PowerPoint presentations for neighborhood meetings, and media events to showcase CSO early action projects.

The Clean Stream Team also publishes the Stream Line newsletter quarterly to inform citizens about progress toward addressing combined sewer overflow issues and other

Introduction

issues relating to water quality and sewer infrastructure. It is distributed via mail and electronically to nearly 1,500 persons.

In 2003, the Clean Stream Team launched the Team WET (Water Education for Teachers) Schools urban water education curriculum in three middle schools in the Indianapolis Public Schools system. The program works with teachers to incorporate urban water education into science, social studies, history and other subjects. The activities promote learning about a range of water issues, from ecology and pollution prevention to wastewater treatment and water stewardship. The Team WET schools are: McFarland Middle School between Pleasant Run and Bean Creek; Harshman Middle School next to Pogues Run; and John Marshall Middle School, located at the northern edge of the Grassy Creek watershed, which drains into Buck Creek. Just north of Grassy Creek is Indian Creek watershed, which drains into Fall Creek.

Web Page: The City of Indianapolis maintains an award-winning Web site at www.indygov.org that is used to convey extensive information relating to the wastewater collection system. Web pages relevant to CSO-related activities include:

- DPW WebPages (www.indygov.org/dpw)
- Indianapolis Clean Stream Team (www.indycleanstreams.org)
- WaterWise (www.indygov.org/dpw/waterwise)

e) Capital investments in safer water recreation alternatives. IDEM's guidance states that municipal programs to prevent and control access do not remove an existing use presumption from recreational beaches open to the public and other swimming areas designated for public recreation. The city does not have any recreational beaches open to the public or other swimming areas along any of the CSO-impacted waterways. To the city's knowledge, there are no public facilities such as designated bathing beaches, lifeguards, or bath houses within or downstream of the combined sewer area along any CSO-impacted streams, including CSO-impacted portions of White River downstream of Marion County. The geographic extent of the CSO-impacted area for each stream is documented later in this document.

Furthermore, the city's parks department has 22 facilities with swimming pools that provide a safer and more popular form of water recreation for the citizens of Indianapolis. These pools have approximately 285,000 users each year. In addition, the city has constructed eight spray pools that provide free water recreation in a number of parks, with three more in planning or design.

The table on the following page details Indy Parks with swimming pools or spray areas near the CSO-impacted areas of each watershed. The location of each facility is also shown on the recreational use survey maps in Appendix C for each watershed.

Introduction

Indy Parks Swimming Pools and Spray Areas near CSO-Impacted Waterways

Park	Watershed	Year Built	Year Renovated	Average Annual Attendance
Krannert Indoor Pool	Eagle Creek	1959		5,000 to 6,000
Krannert Park Pools and Spray Area	Eagle Creek	1968	1991 & 2003	
Thatcher Park Pool	Eagle Creek	1972		8,000 to 10,000
Centennial & Groff Park Spray Area	Eagle Creek/White River	1955	1995	2,000 to 3,000
Haughville Park Spray Area	Eagle Creek/White River	1955	1992	3,000 to 4,000
LaShonna Bates Aquatics Center	Eagle Creek/White River	1998		10,000 to 14,000
Rhodus Park Pool	Eagle Creek/White River	1972	1992	7,000 to 9,000
Arsenal Park Spray Area	Fall Creek	1998		3,000 to 4,000
Douglass Park Pool	Fall Creek	1972		4,000 to 6,000
Martin Luther King Park Pool	Fall Creek	1972	1995	3,500 to 5,000
Bethel Park Pool and Spray Area	Pleasant Run		1996	5,000 to 6,000
Christian Park Spray Area	Pleasant Run	early to mid 1980's	n/a	more than 852
Ellenberger Park Pool	Pleasant Run	1930	1974	24,000 to 27,000
Garfield Aquatic Center	Pleasant Run	1996		25,000 to 28,000
Brookside Park Pool and Spray Area	Pogues Run		1993	10,000 to 12,000
Willard Park Pool and Spray Area	Pogues Run/Pleasant Run	1982	2003 & 2004	6,000 to 7,000
Broad Ripple Park Pool	White River	1983		13,000 to 16,000
Broadway & 61st Park Spray Area	White River	1955	1995	4,000 to 5,000
Municipal Gardens Spray Area	White River	1998		
Riverside Park Pool and Spray Area	White River	1992		7,000 to 9,000
Andrew Ramsey Park Spray Area	White River/Fall Creek	2002		3,000 to 4,000

Since at least 1975, the city's policy, practice and law have worked together to prevent, control and discourage public contact with waters impacted by CSOs. The city has strengthened its efforts in recent years to prevent and control public access to its waterways, and will continue to operate and improve such programs in the future. After LTCP controls are in place, the city is willing to take reasonable steps to prevent or discourage access to areas where water recreation may occur shortly after large storms that cause sewage overflows.

Introduction

In the following sections, the city provides documentation for each CSO-impacted stream reach relative to the other four existing use principles noted in IDEM guidance:

1. Lack of proximity to residential neighborhoods, parks and schools and/or presence of physical hazards, access, flow or substrate that make such areas unsuitable for recreational use;
2. Waters that are dangerous due to physical hazards such as swift currents, rapids, dams or shipping traffic;
3. Limited extent of actual recreational uses;
4. Limited extent of recreational use during or immediately after a significant wet weather event.

This documentation also includes information on water quality conditions to support the fifth factor: unsafe water quality combined with municipal programs to prevent and control access to the water.

Information Supporting Fall Creek Existing Use Determination

Within the CSO area, some citizens occasionally use Indianapolis streams for full- or partial-body contact recreation, based upon surveys conducted by the City of Indianapolis. However, although actual recreational uses may occur on a sporadic basis, other factors preclude an existing use determination. Documentation supporting factors 1-4 on Fall Creek is provided below and in the attachments.

The city is seeking a “no existing use” determination under 40 CFR 131.3(e) for the CSO area of Fall Creek, which extends from Keystone Avenue to the confluence with the White River.

1. Lack of proximity to residential neighborhoods, parks and schools and/or presence of physical hazards, access, flow or substrate that make such areas unsuitable for recreational use

IDEM’s principles for making an existing use determination note that physical access, flow and substrate are factors to consider. (IDEM guidance, p. 51) IDEM also recognizes that waters may be too shallow during dry periods to allow for adult swimming. The City of Indianapolis collected the following information on Fall Creek’s physical access, flow and substrate to support IDEM’s existing use determination:

Physical Access: During a physical stream survey in May-July 2001, the city collected data on the slopes of stream banks and presence of vegetation along CSO-impacted waterways. Maps and tables summarizing the data collected are provided in Appendix A. Although Fall Creek is accessible in some places, dense vegetation or steep slopes discourage use in other areas:

- Dense vegetation (dense brush) covers approximately 87 percent of the stream banks from Keystone Avenue to the confluence with White River. The rest of the area has five percent medium vegetation (some brush) and eight percent light vegetation (grass).
- Steep slopes (greater than 1:1 ratio) discourage use for about 48 percent of the Fall Creek stream bank; moderate slopes (approximately 1:1) affect about 43 percent of the stream bank in the CSO area.

Heavy vegetation borders the channel throughout much of Fall Creek between the Keystone Dam and 34th Street. Land use from Keystone to 38th Street is light industrial and from 38th to 34th street is mixed residential and light industry. Heavy vegetation and steep slopes along much of the stream limit access in this reach.

From 34th Street to Boulevard Dam, Fall Creek flows through older residential neighborhoods. Large trees typically border the channel in this area. Steep flood control levees restrict access throughout much of this reach. There are, however, a number of potential access points along the Fall Creek Greenway, which parallels the north bank of Fall Creek in this area.

Land use in this area is mixed parkland, residential, and light industry. Stream access is mixed in this reach. The stream can be accessed by the public in Watkins Park and at Fall Creek & 16th Street Park and along much of the Fall Creek Greenway. However, steep levee slopes, heavy vegetation, and unstable banks in these locations tend to make that access difficult.

Stream Flow and Depth: Streamflow in Fall Creek is highly variable and is related to precipitation. Flow in Fall Creek is generally highest in the late winter and early spring and, occasionally, during the summer during intense rainfall. Both high and low streamflows can

Fall Creek

significantly affect the quality of the water. During wet weather, Fall Creek streamflows are predominantly made up of CSO flows downstream of the Keystone Dam. During the summer and fall, most of the water above the Keystone Dam is diverted into the Indianapolis Water treatment plant, allowing little water to pass over the dam. To demonstrate the variability in flow, a hydrograph of U.S. Geological Survey gauge data is provided in Appendix B. Stream flow during wet weather is described in more detail under Factor 2 below.

Stream depth varies in the CSO-impacted portions of Fall Creek, ranging from 1-3 feet during dry weather. A number of exposed sandbars and islands have formed from sediments deposited due to reduced flow downstream of the Indianapolis Water drinking water intake at Keystone Dam.

Substrate: The substrate in Fall Creek is sand and rocks. However, organic sludge lies in many areas and would discourage wading. CSO control is expected to improve the substrate by reducing the primary source of organic sludge deposits.

Summary: Although Fall Creek is accessible to the public in some areas, its dense vegetation, steep-to-medium slopes, and low stream flow make the waterway very poor for full-body or partial-body contact recreational activities. Dense vegetation covers the stream banks and discourages public access along 87 percent of the CSO-impacted area. Steep to moderate stream bank slopes discourage access along approximately 91 percent of the area. Throughout the CSO area, much of Fall Creek is too shallow to support swimming by adults or children during dry weather, when people are most likely to seek out water recreation. Much of the area has a depth between 1 and 3 feet during the recreational season.

2. Waters that are dangerous due to physical hazards such as swift currents, rapids, dams or shipping traffic



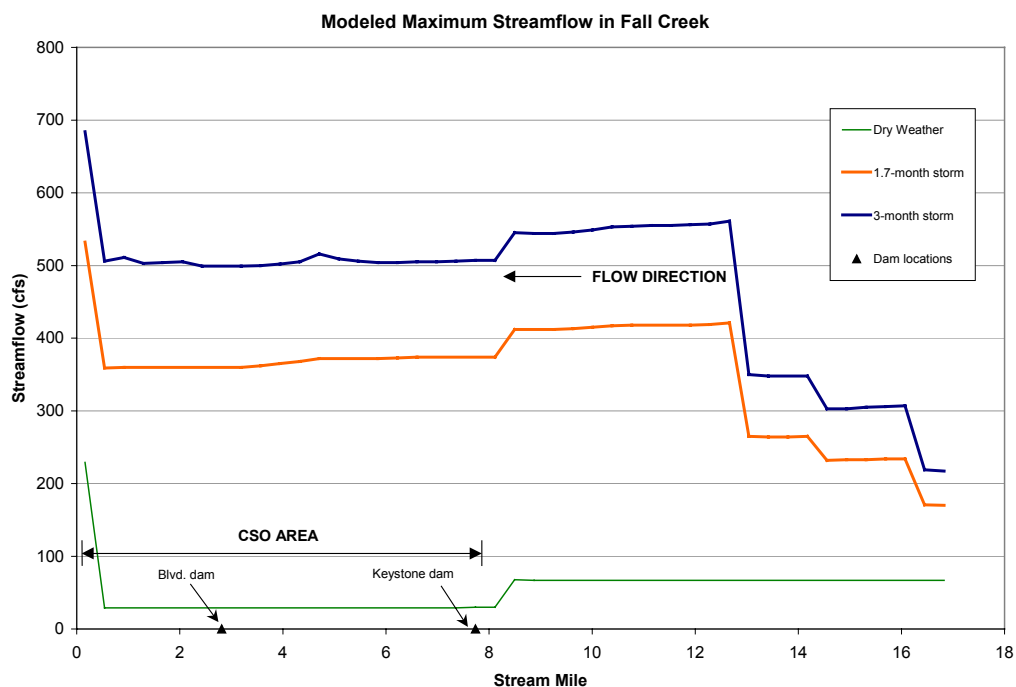
The U.S. Geological Survey maintains a gauging station on Fall Creek at Millersville (i.e., Emerson Way bridge, 9.2 river-miles upstream of its mouth). This gauging station is upstream of the Keystone Avenue dam, where Indianapolis Water makes water supply withdrawals. Wet weather events can transform the low flow nature of the stream into a dangerous waterway, as shown in the photographs below. The first photograph shows Boulevard Dam during summertime dry weather. Note that the walls of the dam are visible on both sides of the creek in the photograph.

Fall Creek

The photograph below shows the same location following the September 1, 2003, 100-year rainfall event. Note that the dam is submerged, but turbulence can be seen in the location of the dam. Stream flows are too dangerous for recreational activities.



For purposes of the existing use determination, the city reviewed storm events greater than a 1.7-month storm (1.25 inches of rainfall over a 24-hour period). This storm was chosen as an example large storm that might not be controlled by the city's long-term control plan. Similar conditions in terms of flow, water quality, etc. would result from 2-month, 3-month or larger storms. As shown in the hydrograph below, estimated maximum stream flows due to a 1.7-month storm range from 360-535 cfs in the CSO area of Fall Creek. During these infrequent storms, Fall Creek is not safe for recreation. In comparison, estimated maximum stream flows due to a 3-month storm range from 500 cfs to 685 cfs.



Fall Creek

One gauge of safety for water contact recreation is the safety of wading, since streams that are not safe for wading would also not be safe for swimming or other water contact activities. Each wader should know and strictly adhere to their personal wading abilities and limitations. When stream flows are low, trained USGS employees measure stream discharge by wading into the stream. When stream flows are high or potentially dangerous, USGS hydrologists make discharge measurements using acoustic Doppler current meters deployed from a tethered boat. At the Millersville gauge, the USGS staff generally did not wade in flows above 340 cfs. Although USGS hydrologists occasionally waded at higher flows, they are equipped with a personal flotation device and have extensive wading safety training and experience. It would not be safe for an inexperienced person to wade the stream at such high flows. During rain events ranging from 1.7 months to 3 months, estimated stream flows range from 360 to 685 cfs and are too dangerous for wading. Although wading is reported in some locations along Fall Creek, it is not known to occur during stream flows occurring from a 1.7-month storm or greater.

Summary: Large storms create stream flows and velocities that are dangerous in Fall Creek, precluding use of the stream for water contact activities such as wading or swimming. These currents will continue to render Fall Creek unsafe for recreational activities during combined sewer overflow events. This data supports a finding of “no existing use” during storm events exceeding the 1.7-month storm on Fall Creek for primary and secondary recreation.

3. Limited extent of actual recreational uses

IDEM’s principles for making an existing use determination establish that “the occasional or incidental use by individual adults does not automatically establish an existing use for recreation.” (IDEM guidance, p. 51). Therefore, the limited extent and frequency of actual uses of waterways should be a factor when determining whether a recreational use is an existing use. There are no community-sanctioned or privately owned recreational areas for swimming, kayaking or other recreational uses on the CSO-impacted portions of Fall Creek. However, some limited and isolated recreational uses do occur. To establish the extent of actual recreational uses, the city conducted public meetings and a non-random face-to-face survey to collect data on how people use or have seen others use CSO-impacted waterways. Sources of information used by the city included:

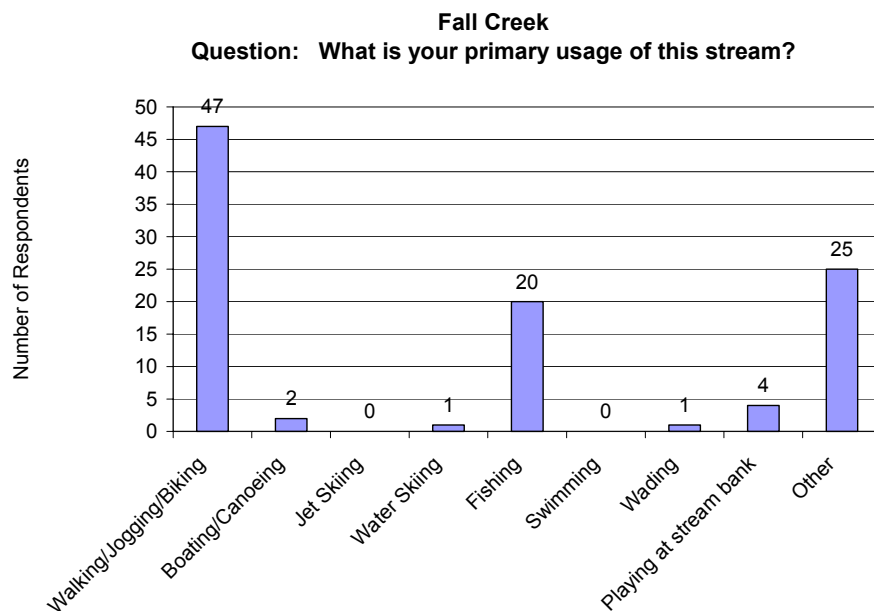
- Physical stream survey in May-July 2001
- Public non-random intercept survey in June 2002 (Fall Creek Use Survey)
- Public outreach meetings with neighborhood associations, environmental activists and recreational groups in September-November 2002
- Marion County Health Department reports of stream use from 2001-2002
- Indy Parks stream use survey in October 2002

Location of Uses: Isolated recreational uses on Fall Creek in the CSO area are found predominantly along the many parks and greenways located along this low-flow, neighborhood stream. However, these recreational uses are precluded during large storm events. Based upon the above data sources, the city identified 18 reported fishing locations, 12 reported playing-at-stream-bank locations, three reported wading locations, and zero reported swimming locations on Fall Creek. Wading and playing by the stream bank are reported at various spots along the greenways, including Fall Creek Greenway, adjacent to Watkins Park, and 30th Street. A map illustrating the observed and reported uses is located in Appendix C.

Fall Creek

Extent of Uses: While recreational activities do occur on Fall Creek within the CSO area, the number of people engaging in water contact activities and the frequency of those activities is limited. In the Fall Creek Use Survey, the primary recreational activity reported by adults surveyed along Fall Creek was walking/jogging/biking (47 of 100 people surveyed). Approximately 25 percent of respondents reported a primary use of fishing, wading or playing at stream bank, as shown in the figure below. For purposes of the survey, the following definitions were used:

- **Swimming:** Full-body contact¹ with the water, including a high potential for swallowing the water (water should be deep enough to permit actual swimming).
- **Wading:** Partial-body contact² with the water (usually water contact to lower legs and possibly hands and arms).
- **Playing at the Stream Bank:** Kneeling, squatting or sitting at stream bank (some water contact may occur when hands reach into the water to touch or pick up something).
- **Fishing:** Fishing at the stream bank or from a boat (water contact occurs through handling fish and tackle).



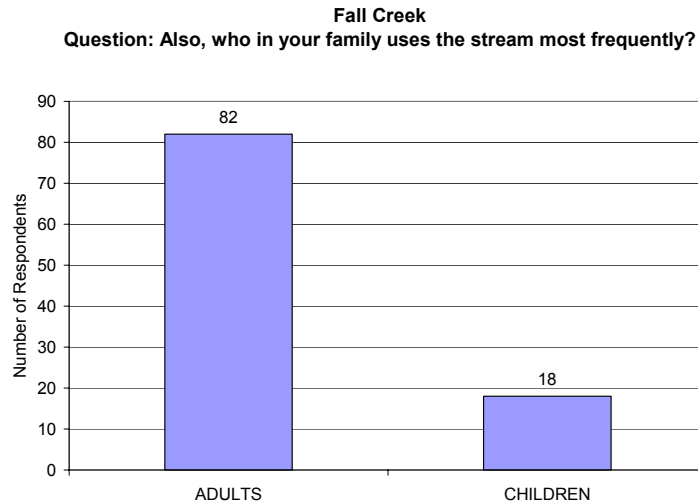
Note: Based upon personal interviews in 2002 with 100 people recreating, living or working near affected streams.

Note in the figure above that one person said his or her primary usage of Fall Creek is water skiing. Water skiing is not possible on Fall Creek because it is not a navigable stream.

¹ This is also known as primary contact recreation.

² This is also known as secondary contact recreation.

Fall Creek



Note: Based upon personal interviews in 2002 with 100 people recreating, living or working near affected streams.

Also according to those surveyed, adults are more likely than children to use Fall Creek for recreational activities.

The full results of the Fall Creek Use Survey are located in Appendix D. Note that the survey results cannot be extrapolated to the city's general population. The survey was designed to identify and survey adults most likely to use the waterways and was not conducted using random sampling. Nor is the sample size large enough to warrant extrapolation of the results to the general population.

Frequency of Use: In a typical year, 39 percent of the respondents reported participating in recreational activities along Fall Creek every week and 31 percent reported less than once a month. This data includes all recreational activities, including those not involving water contact.

Summary: The city used a variety of data sources and public participation methods to gather information on the extent and frequency of water recreation activities in and along Fall Creek. Based upon this information, the city identified a number of locations where recreational uses occur along Fall Creek. The primary use of this waterway for 47 percent of respondents is walking, jogging and/or biking along the greenways adjoining the stream. Swimming was not reported. Wading and other water-contact activities are reported much less frequently. There are no public or private bathing beaches along Fall Creek.

4. Limited extent of recreational use during or immediately after a significant wet weather event.

Little evidence exists of full-body or partial-body contact recreational uses of CSO-impacted portions of Fall Creek, especially after significant wet weather events. Where there is evidence of use, it is very infrequent. Most respondents to the Fall Creek Use Survey indicated that recreational usage within 24 hours after a rainfall is observed infrequently or not at all. Fifty-one percent said that, based on their experience, they have seen adults or children playing in the stream when the current is slow, compared to 9 percent who have seen children or adults playing in the stream when the current is fast. Eighty percent of the interviewees also reported that use is infrequent (only once or twice a month) within 24 hours after a rainfall. However, 33 percent of respondents reported observing children or adults playing in the stream during or within 24 hours

Fall Creek

after a rainfall. The survey did not characterize the size of the rainfall events after which recreation was observed. Based on the answer to the question about fast or slow currents, people are more likely to recreate in dry weather or after a light rain than a major storm. The evidence collected by the city indicates that recreational use is rare or non-existent during and after large storm events.

5. Unsafe water quality combined with municipal programs that prevent and control access to the water.

IDEM guidance notes that water quality that is unsafe for recreational use and municipal programs to prevent and control access may be a factor in determining an existing use:

If the water quality is unsafe and access to the water is precluded by (a) existing impediments to physical access such as steep banks, fencing or high retaining walls, then IDEM will not presume an existing recreational use. In order for IDEM to determine that access is precluded by the municipality, the municipality must take steps to actively prevent adults and children from actually using the water. This requires the municipality to prevent and control access to the water and to conduct a reasonable proactive outreach media and educational program to prevent actual use during and immediately following a significant wet weather event. This presumption will not apply to recreational beaches open to the public and other swimming areas designated for public recreation. (IDEM guidance, p. 51.)

Information on the city's programs to prevent and control access to CSO-impacted waterways is presented in the introduction section to this submittal. Information documenting unsafe water quality on Fall Creek is presented below.

Water Quality: To demonstrate there is no existing recreational use under this factor, the city should demonstrate that recreational water quality standards are not achieved within the CSO-impacted area of Fall Creek during storm events. The table below provides a summary of in-stream water quality data collected in the CSO area of Fall Creek from 2000 – 2002 by the Indianapolis Office of Environmental Services and the Marion County Health Department. Results are shown for all data, dry weather data only and wet weather data. The data show that during wet weather, the geometric mean within the CSO area in Fall Creek was 552 *E. coli* colonies/100 mL, exceeding the state's recreational use standard of 125 cfu/100 mL. More than 65 percent of samples taken in wet weather periods exceed the single sample standard of 235 cfu/100 mL.

Fall Creek *E. coli* Bacteria Compliance (CSO Area)

Data Source	Geometric Mean of 2000-2002 data¹	% of Samples > 235 cfu/100 mL	Total Number of Samples
All Data	295	50.1%	902
Dry Weather Data	146	33.2%	425
Wet Weather Data	552	65.2%	477

⁽¹⁾ Indiana's standard for geometric mean is 125 cfu/100 mL.

Fall Creek

To determine whether water quality standards are being met in the CSO area of Fall Creek during or after large storm events, the city further analyzed in-stream water quality data collected in 2000-2002. Based upon a NetStorm simulation of LTCP Systemwide Control Plan 1, the city identified 17 storm events that would have resulted in untreated overflows if the city had installed CSO control facilities that achieve 93 percent capture. The city does not have data to correlate to all 17 storm events, since the city's existing sampling program is designed to collect data on a periodic basis without regard to weather conditions. However, on the days when existing 2000-2002 data could be correlated to an estimated overflow event, the data consistently show that the single sample maximum standard of 235 *E. coli* colonies/100 mL is not being met. This demonstrates that the CSO area of Fall Creek is unsafe for recreational use during and after those storm events. These types of storm events would have caused overflow events both before and after November 28, 1975, the date after which an existing use must be protected if it has been "attained."

FALL CREEK COMPARISON OF ESTIMATED OVERFLOW EVENTS AND HISTORICAL E. COLI BACTERIA SAMPLING 2000-2002								
Estimated Overflow Event Date (93% Capture)	Date of Sample	16th St OES (cfu/100 mL)	30th St (cfu/100 mL)	Central (cfu/100 mL)	Capitol (cfu/100 mL)	MLK (cfu/100 mL)	Stadium (cfu/100 mL)	Average (cfu/100 mL)
4/7/00	4/7/00	N/A	55,000	72,000	74,000	21,000	19,000	48,200
5/26/00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7/4/00	7/5/00	N/A	5,900	6,300	5,500	3,300	4,800	5,200
8/17/00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
9/10/00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10/4/00	10/5/00	200,000	N/A	N/A	N/A	N/A	N/A	N/A
4/10/01	4/10/01	N/A	410	200	100	100	100	200
6/5/01	6/5/01	N/A	1,340	1,340	1,560	3,280	2,780	2,100
7/1/01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10/10/01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10/24/01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4/21/02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4/24/02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4/27/02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5/7/02	5/7/02	2,400	4,400	2,650	2,650	1,850	3,400	2,900
5/12/02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
9/20/02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
11/10/02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Estimated Overflow Dates: 1950-2003 NetSTORM Simulation for System Wide Plan 1, 93% Capture Level of Control.

Sampling Data: 2000 - 2002 instream *E. coli* bacteria sampling by OES and MCHD.

Note: Sampling data is presented only for dates on or following the estimated overflow event date, and for locations within the CSO area.

Recreational users also may be discouraged during storm events due to high flows, murky water as it moves sediments downstream, and unattractive odors from the stream. Water quality is clearly unsafe for recreational use, particularly during these large wet weather events.

Summary

Although occasional recreational uses occur along the CSO-impacted areas of Fall Creek, these should not be considered existing uses under 40 CFR 131.3(e) based upon the following factors:

1. Physical access and flow that are unsuitable for recreational use during large storm events, such as those exceeding a 1.7-month storm;
2. Waters that are dangerous during large storm events due to swift currents and rapids
3. Limited extent and frequency of actual recreational uses
4. Minimal recreational use during or immediately after significant wet weather events;
5. Unsafe water quality combined with extensive municipal programs to prevent and control access to the water following wet weather events.

Fall Creek

Furthermore, the physical and water quality conditions of Fall Creek downstream of Keystone Avenue make primary and secondary contact recreational activities unsuitable, undesirable, and unsafe during significant wet weather events. Based upon this data, we conclude that full-body and partial-body contact recreation is not an existing use of Fall Creek downstream of Keystone Avenue during storm events exceeding the 1.7-month storm. Therefore, we request that IDEM affirm the city's conclusion and allow the city to proceed with a UAA to evaluate the attainable uses of the CSO area of Fall Creek during the periods and conditions under which we contemplate having residual overflows.

Appendices:

- A. Physical Stream Survey Maps and Tables
- B. USGS flow graph
- C. Fall Creek Recreational Use Map
- D. 2002 Fall Creek Use Survey

Reference:

U.S. Geological Survey, 1996. Low-Flow Characteristics of Indiana Streams. USGS Water Resources Investigation Report 96-4128. Page 128.

Information Supporting Eagle Creek Existing Use Determination

Within the CSO area, some citizens occasionally use Indianapolis streams for full- or partial-body contact recreation, based upon surveys conducted by the City of Indianapolis. However, although actual recreational uses may occur on a sporadic basis, other factors preclude an existing use determination. Documentation supporting factors 1-4 on Eagle Creek is provided below and in the attachments.

The city is seeking a “no existing use” determination during storm events exceeding the 1.7-month storm for the CSO area of Eagle Creek, which begins at Tibbs Avenue and ends at its confluence with White River. It also includes the portion of Little Eagle Creek from Vermont Street to its confluence with Eagle Creek.

1. Lack of proximity to residential neighborhoods, parks and schools and/or presence of physical hazards, access, flow or substrate that make such areas unsuitable for recreational use

IDEM’s principles for making an existing use determination note that physical access, flow and substrate are factors to consider. (IDEM guidance, p. 51) IDEM also recognizes that waters may be too shallow during dry periods to allow for adult swimming. The City of Indianapolis collected the following information on Eagle Creek’s physical access, flow and substrate to support IDEM’s existing use determination:

Physical Access: During a physical stream survey in May-July 2001, the city collected data on the slopes of stream banks and presence of vegetation along CSO-impacted waterways. Maps and tables summarizing the data collected are provided in Appendix A. Although Eagle Creek is accessible in some places, dense vegetation or steep slopes discourage use in other areas:

- Dense vegetation (dense brush) covers approximately 43 percent of the stream banks from Michigan Street to the confluence with White River. The rest of the area has 14 percent medium vegetation (some brush) and 42 percent light vegetation (grass).
- Steep slopes (greater than 1:1 ratio) discourage use for about 10 percent of the Eagle Creek stream bank; moderate slopes (approximately 1:1) affect about eight percent of the stream bank in the CSO area.
- Portions of Eagle Creek flow through urban and industrial areas.

The section of Little Eagle Creek approximately 0.75 miles upstream of Cossell Road is characterized by dense vegetation along both sides of the channel. Land use in this section is primarily industrial with some small residential areas. Stream access in this reach is limited by dense vegetation.

Between Cossell Road and Kentucky Avenue both Little Eagle Creek and Eagle Creek are bounded by earthen levees. Land use is mixed industry and high density residential. The levees are maintained in mown turfgrass. Some riparian forest is developing near the channel in the lower reaches of this section. Despite the steep levees throughout much of this reach, accessibility is good. There are several areas where vehicles can drive right up to the stream.

From Kentucky Avenue to its confluence with the White River, Eagle Creek is a channelized stream that flows through a heavily industrial area. The channel is bounded by earthen levees throughout this section. The levees are maintained in mown turf. Some riparian forest is

Eagle Creek

developing near the channel in the lower reaches of this section. Accessibility is very limited in this reach by industrial activity along both banks.

Stream Flow and Depth: Stream flow in Eagle Creek is highly variable and is related to precipitation and water releases from the Eagle Creek dam. Flow in Eagle Creek is generally highest in the late winter and early spring and, occasionally, during the summer following intense rainfall. Both high and low stream flows can significantly affect water quality. To demonstrate the variability in flow, a hydrograph of U.S. Geological Survey flow gauge data is provided in Appendix B. Stream flow during wet weather is described in more detail under Factor 2 below.

Stream depth is generally low in the CSO-impacted portions of Eagle Creek, typically less than one foot deep during dry weather, according to the May/June 2001 field survey.

Substrate: The substrate in Eagle Creek is mostly sand and rocks. Although the substrate and shallow depths in Eagle Creek can be suitable for wading, occasional deep pools make wading potentially dangerous, especially to children.

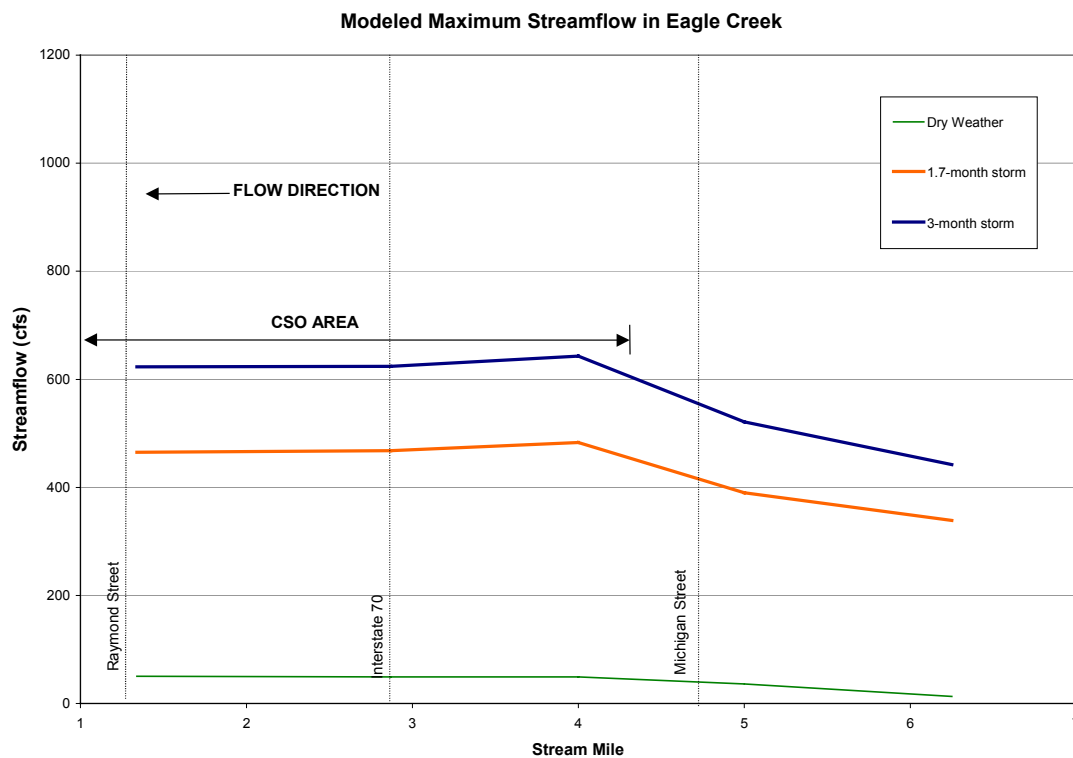
Summary: Although portions of Eagle Creek are inaccessible to the public, much of the stream is accessible due to light vegetation and gradual slopes. The majority of the area has a depth between 6 and 12 inches during the recreational season. In the lower reaches, the high industrial activity on both banks discourages people from accessing the stream at these locations.

2. Waters that are dangerous due to physical hazards such as swift currents, rapids, dams or shipping traffic

The U.S. Geological Survey maintains a gauging station on Eagle Creek on the downstream side of the bridge on Lynhurst Drive (i.e., 7.1 river-miles upstream of its mouth). Wet weather events can transform the low flow nature of the stream into a dangerous and unsafe waterway. The first photograph below shows Eagle Creek at low flow conditions in June 2001 upstream of the railroad bridge near McCarty Avenue. The second photograph shows the same location following a 1.25" rain event in October 2004. The sandy, graveled areas and low stream flows conducive to recreation are covered by fast-flowing and murky water following such a storm event.



Eagle Creek



For purposes of the existing use determination, the city reviewed storm events greater than a 1.7-month storm. This storm was chosen as an example large storm that might not be controlled by the city's long-term control plan. Similar conditions in terms of flow, water quality, etc. would result from 2-month, 3-month or larger storms. As shown in the hydrograph below, estimated maximum stream flows due to a 1.7-month storm range from 465-485 cfs in the CSO area of Eagle Creek. In comparison, estimated maximum stream flows due to a 3-month storm range from 620-645 cfs. During these infrequent storms, Eagle Creek is not safe for recreation.

Eagle Creek

One gauge of safety for water contact recreation is the safety of wading, since streams that are not safe for wading would also not be safe for swimming or other water contact activities. Each wader should know and strictly adhere to their personal wading abilities and limitations.

When stream flows are low, trained USGS employees measure stream discharge by wading into the stream. When stream flows are high or potentially dangerous, USGS hydrologists make discharge measurements using acoustic Doppler current meters deployed from a tethered boat. At the Lynhurst gauge on Eagle Creek, the USGS staff generally did not wade in flows above 140 cfs. Although USGS hydrologists occasionally wade at higher flows, they are equipped with a personal flotation device and have extensive wading safety training and experience. It would not be safe for an inexperienced person to wade the stream at such high flows. During rain events ranging from 1.7 months to 3 months, estimated stream flows range from 465-645 cfs and are too dangerous for wading. Although wading is reported in some locations along Eagle Creek, it is not known to occur during stream flows occurring from a 1.7-month storm or greater.

Summary: Large storms create stream flows and velocities that are dangerous in Eagle Creek, precluding use of the stream for water contact activities such as wading or swimming. These currents will continue to render Eagle Creek unsafe for recreational activities during combined sewer overflow events. This data supports a finding of “no existing use” during storm events exceeding the 1.7-month storm on Eagle Creek.

3. Limited extent of actual recreational uses

IDEM’s principles for making an existing use determination establish that “the occasional or incidental use by individual adults does not automatically establish an existing use for recreation.” (IDEM guidance, p. 51.) Therefore, the limited extent and frequency of actual uses of waterways should be a factor when determining whether a recreational use is an existing use. There are no community-sanctioned or privately owned recreational areas for swimming, kayaking or other recreational uses on the CSO-impacted portions of Eagle Creek. However, some recreational uses do occur.

To establish the extent of actual recreational uses, the city conducted public meetings and a non-random face-to-face survey to collect data on how people use or have seen others use CSO-impacted waterways. Sources of information used by the city included:

- Physical stream survey in May-July 2001
- Public non-random intercept survey in June 2002 (Eagle Creek Use Survey)
- Public outreach meetings with neighborhood associations, environmental activists and recreational groups in September-November 2002
- Marion County Health Department reports of stream use from 2001-2002
- Indy Parks stream use survey in October 2002

Location of Uses: Isolated recreational uses on Eagle Creek in the CSO area are found predominantly in residential areas. Based upon the above data sources, the city identified eight reported fishing locations, five reported playing-at-stream-bank locations, seven reported wading

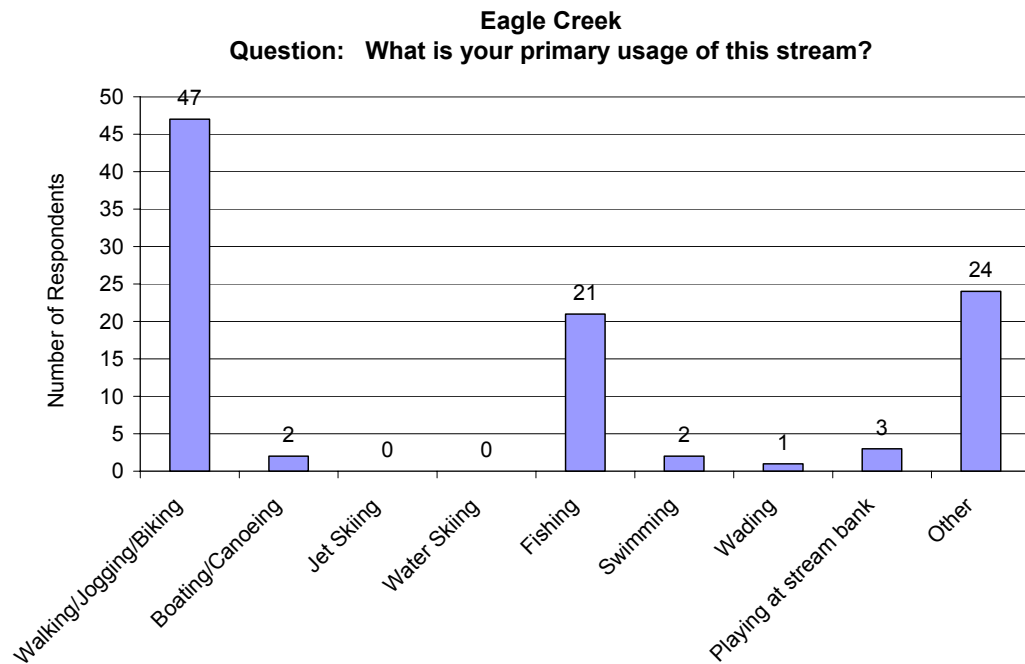
Eagle Creek

locations, and nine reported swimming locations on Eagle Creek. Wading and playing by the stream bank are reported at various spots, including Cossell Road, adjacent to Ridenour Park, and Sadie Street. Fishing also is reported along numerous locations along this stream. Swimming was reported along Eagle Creek at many of the same points as wading was reported. Based upon the information gathered in this survey, the city placed additional warning signs along Eagle Creek to discourage wading and swimming. A map illustrating the observed and reported uses is located in Appendix C.

Extent of Uses: While some recreational activities do occur on Eagle Creek within the CSO area, the number of people engaging in water contact activities and the frequency of those activities is limited. In the Eagle Creek Use Survey, the primary recreational activity reported by people along Eagle Creek was walking/jogging/biking (47 of 100 people surveyed). Twenty-one percent reported a primary use of fishing. Very few reported swimming, wading or playing at stream bank as a primary use, as shown in the graph below. For purposes of the survey, the following definitions were used:

- **Swimming:** Full-body contact with the water, including a high potential for swallowing the water (water should be deep enough to permit actual swimming)
- **Wading:** Partial body contact with the water (usually water contact to lower legs and possibly hands and arms)
- **Playing at the Stream Bank:** Kneeling, squatting or sitting at stream bank (some water contact may occur when hands reach into the water to touch or pick up something)
- **Fishing:** Fishing at the stream bank or from a boat (water contact occurs through handling fish and tackle)

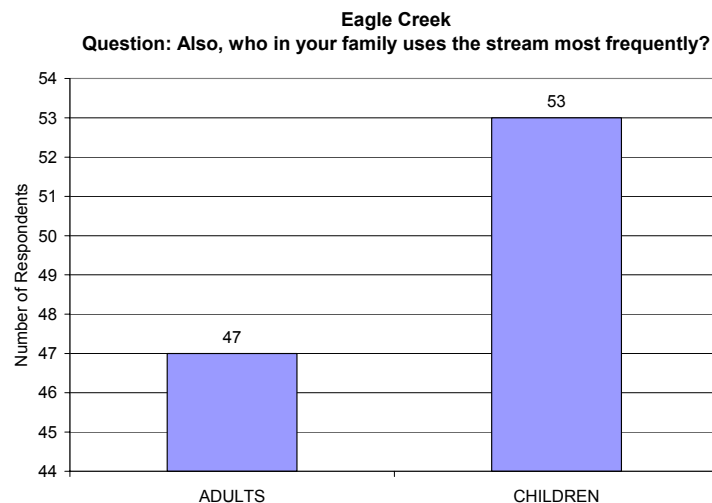
Eagle Creek



Note: Based upon personal interviews in 2002 with 100 people recreating, living or working near affected streams.

Also according to the survey, children are more likely than adults to use Eagle Creek for recreational activities.

Eagle Creek



Note: Based upon personal interviews in 2002 with 100 people recreating, living or working near affected streams.

According to the survey and additional neighborhood meetings to confirm the survey's findings, swimming is observed or practiced much less frequently than activities that do not involve full-body contact. The full results of the Eagle Creek Use Survey are located in Appendix D. Note that the survey results cannot be extrapolated to the city's general population. The survey was designed to identify people most likely to use the waterways and was not conducted using random sampling. Nor is the sample size large enough to warrant extrapolation of the results to the general population.

Frequency of Use: In a typical year, 21 percent of the respondents reported participating in recreational activities along Eagle Creek every week and 23 percent reported less than once a month.

Summary: The city used a variety of data sources and public participation methods to gather information on the extent and frequency of water recreation activities in and along Eagle Creek. Based upon this information, the city identified a number of locations where recreational uses occur along Eagle Creek. The primary use of this waterway for 47 percent of respondents is walking, jogging and/or biking along the greenways adjoining the stream. Swimming, wading and other water-contact activities are reported much less frequently. There are no public or private bathing beaches within the CSO-impacted areas of Eagle Creek.

4. Limited extent of recreational use during or immediately after a significant wet weather event.

Little evidence exists of full-body or partial-body contact recreational uses of CSO-impacted portions of Eagle Creek, especially after significant wet weather events. Where there is evidence of use, it is very infrequent. Most respondents to the Eagle Creek Use Survey indicated that recreational usage within 24 hours after a rainfall is observed infrequently or not at all. Seventy-four percent said that, based on their experience, they have seen adults or children playing in the stream when the current is slow, compared to 23 percent who have seen children or adults playing in the stream when the current is fast. Seventy-seven percent of the interviewees also reported that use is infrequent (only once or twice a month) within 24 hours after a rainfall. However, 39 percent of respondents reported observing children or adults playing in the stream during or

Eagle Creek

within 24 hours after a rainfall. The survey did not characterize the size of the rainfall events after which recreation was observed. Based on the answer to the question about fast or slow currents, people are more likely to recreate in dry weather or after a light rain than a major storm. The evidence collected by the city indicates that recreational use is rare or non-existent during and after large storm events.

5. Unsafe water quality combined with municipal programs that prevent and control access to the water.

IDEM guidance notes that unsafe water quality and municipal programs to prevent and control access may be a factor in determining an existing use:

If the water quality is unsafe and access to the water is precluded by (a) existing impediments to physical access such as steep banks, fencing or high retaining walls, then IDEM will not presume an existing recreational use. In order for IDEM to determine that access is precluded by the municipality, the municipality must take steps to actively prevent adults and children from actually using the water. This requires the municipality to prevent and control access to the water and to conduct a reasonable proactive outreach media and educational program to prevent actual use during and immediately following a significant wet weather event. This presumption will not apply to recreational beaches open to the public and other swimming areas designated for public recreation. (IDEM guidance, p. 51.)

Information on the city's programs to prevent and control access to CSO-impacted waterways is presented in the introduction section to this submittal. Information documenting unsafe water quality on Eagle Creek is presented below.

Water Quality: To demonstrate there is no existing recreational use under this factor, the city should demonstrate that recreational water quality standards are not achieved within the CSO-impacted area of Eagle Creek during storm events.

The table below provides a summary of in-stream water quality data collected in the CSO area of Eagle Creek from 2000 – 2002 by the Indianapolis Office of Environmental Services and the Marion County Health Department. Results are shown for all data, dry weather data only and wet weather data. The data show that during wet weather, the geometric mean within the CSO area in Eagle Creek was 1719 *E. coli* colonies/100 mL, exceeding the state's recreational use standard of 125 cfu/100 mL. More than 80 percent of samples taken in wet weather periods exceed the single sample standard of 235 cfu/100 mL.

Eagle Creek

Eagle Creek *E. coli* Bacteria Compliance (CSO Area)

Data	Geometric Mean 2000-2002 ¹	% of Samples 235 cfu/100	Total of
All	419	58.7	63
Dry Weather	165	44.7	38
Wet Weather	171	80.0	25

⁽¹⁾ Indiana's standard for geometric mean is 125

To determine whether water quality standards are being met in the CSO area of Eagle Creek during or after large storm events, the city further analyzed in-stream water quality data collected in 2000-2002. Based upon a NetStorm simulation of LTCP Systemwide Control Plan 1, the city identified 17 storm events that would have resulted in untreated overflows if the city had installed CSO control facilities that achieve 95 percent capture. The city does not have data to correlate to all 17 storm events, since the city's existing sampling program is designed to collect data on a periodic basis without regard to weather conditions. However, on two dates when existing 2000-2002 data could be correlated to an estimated overflow event, the data show that the single sample maximum standard of 235 *E. coli* colonies/100 mL was not being met. This demonstrates that the CSO area of Eagle Creek is unsafe for recreational use during and after those storm events. These types of storm events would have caused overflow events both before and after November 28, 1975, the date after which an existing use must be protected if it has been "attained."

EAGLE CREEK COMPARISON OF ESTIMATED OVERFLOW EVENTS AND HISTORICAL <i>E. COLI</i> BACTERIA SAMPLING 2000-2002						
Estimated Overflow Event Date (93% Capture)	Date of Sample	Raymond OES (cfu/100 mL)	Vermont (cfu/100 mL)	McCarty (cfu/100 mL)	Minnesota (cfu/100 mL)	Average (cfu/100 mL)
4/7/00	N/A	N/A	N/A	N/A	N/A	N/A
5/26/00	N/A	N/A	N/A	N/A	N/A	N/A
7/4/00	N/A	N/A	N/A	N/A	N/A	N/A
8/17/00	N/A	N/A	N/A	N/A	N/A	N/A
9/10/00	N/A	N/A	N/A	N/A	N/A	N/A
10/4/00	10/5/00	84,000	N/A	N/A	N/A	N/A
4/10/01	N/A	N/A	N/A	N/A	N/A	N/A
6/5/01	N/A	N/A	N/A	N/A	N/A	N/A
7/1/01	7/2/01	N/A	17,250	12,960	9,580	13,300
10/10/01	N/A	N/A	N/A	N/A	N/A	N/A
10/24/01	N/A	N/A	N/A	N/A	N/A	N/A
4/21/02	N/A	N/A	N/A	N/A	N/A	N/A
4/24/02	N/A	N/A	N/A	N/A	N/A	N/A
4/27/02	N/A	N/A	N/A	N/A	N/A	N/A
5/7/02	N/A	N/A	N/A	N/A	N/A	N/A
5/12/02	N/A	N/A	N/A	N/A	N/A	N/A
9/20/02	N/A	N/A	N/A	N/A	N/A	N/A
11/10/02	N/A	N/A	N/A	N/A	N/A	N/A

Source: Estimated Overflow Dates: 1950-2003 NetSTORM Simulation for System Wide Plan 1, 93% Capture Level of Control.

Sampling Data: 2000 - 2002 instream *E. coli* bacteria sampling by OES and MCHD.

Note: Sampling data is presented only for dates on or following the estimated overflow event date, and for locations within the CSO area.

Summary

Although occasional recreational uses occur along the CSO-impacted areas of Eagle Creek, these should not be considered existing uses under 40 CFR 131.3(e) based upon the following factors:

Eagle Creek

1. Physical access and flow that are unsuitable for recreational use during large storm events, such as those exceeding a 1.7-month storm;
2. Waters that are dangerous during large storm events due to swift currents and rapids
3. Limited extent and frequency of actual recreational uses
4. Minimal recreational use during or immediately after significant wet weather events;
5. Unsafe water quality combined with extensive municipal programs to prevent and control access to the water following wet weather events.

Furthermore, the physical and water quality conditions of Eagle Creek downstream of Tibbs Avenue make primary and secondary contact recreational activities unsuitable, undesirable, and unsafe during significant wet weather events. Based upon this data, we conclude that full-body and partial-body contact recreation is not an existing use of Eagle Creek downstream of Tibbs Avenue during storm events exceeding the 1.7-month storm. Therefore, we request that IDEM affirm the city's conclusion and allow the city to proceed with a UAA to evaluate the attainable uses of the CSO area of Eagle Creek during the periods and conditions under which we contemplate having residual overflows.

Appendices:

- A. Physical Stream Survey Maps and Tables
- B. USGS flow graph
- C. Eagle Creek Recreational Use Map
- D. 2002 Eagle Creek Use Survey

Reference:

U.S. Geological Survey, 1996. Low-Flow Characteristics of Indiana Streams. USGS Water Resources Investigation Report 96-4128. Page 134.

Information Supporting Pogues Run Existing Use Determination

Within the CSO area, some citizens occasionally use Indianapolis streams for full- or partial-body contact recreation, based upon surveys conducted by the City of Indianapolis. However, although actual recreational uses may occur on a sporadic basis, other factors preclude an existing use determination. Documentation supporting Factors 1-4 on Pogues Run is provided below and in the attachments.

The city is seeking a “no existing use” determination during storm events exceeding the 1.7-month storm under 40 CFR 131.3(e) for the CSO area of Pogues Run, which extends from Interstate 70 to its confluence with the White River. Note below in Factor 1 that the portion of Pogues Run from New York Street to the confluence with the White River is enclosed in a tunnel that flows under the downtown area and is not accessible for any recreational use.

1. Lack of proximity to residential neighborhoods, parks and schools and/or presence of physical hazards, access, flow or substrate that make such areas unsuitable for recreational use

IDEM’s principles for making an existing use determination note that physical access, flow and substrate are factors to consider. (IDEM guidance, p. 51) IDEM also recognizes that waters may be too shallow during dry periods to allow for adult swimming. The City of Indianapolis collected the following information on Pogues Run’s physical access, flow and substrate to support IDEM’s existing use determination:

Physical Access: During a physical stream survey in May-July 2001, the city collected data on the slopes of stream banks and presence of vegetation along CSO-impacted waterways. Maps and tables summarizing the data collected are provided in Appendix A. Pogues Run has variable accessibility. In some areas dense vegetation or steep slopes discourage use:

- Dense vegetation (dense brush) covers approximately 64 percent of the stream banks from 21st Street to the Pogues Run Tunnel (New York Avenue). The rest of the area has 23 percent medium vegetation (some brush) and 13 percent light vegetation (grass).
- Steep slopes (greater than 1:1 ratio) discourage use for about 32 percent of the Pogues Run stream bank; moderate slopes (approximately 1:1) affect about 35 percent of the stream bank in the CSO area.
- Similar to Pleasant Run, much of the stream flows through city parkland. The remainder flows through high-density residential and light industrial areas.

Pogues Run from 21st Street (Forest Manor Park) to State Avenue (Spades Park) flows through three city parks: Forest Manor, Brookside, and Spades. Dense vegetation and steep slopes can limit stream access throughout most of this reach. However, there are abundant public access points in the parks and along the greenway.

From State Avenue (Spades Park) to New York Street, Pogues Run flows through a mixed residential and urban corridor. Streamside vegetation is typically turfgrass. This section of Pogues Run is generally very accessible.

From New York Street to the confluence with White River, Pogues Run is enclosed in an underground conduit. This section of Pogues Run flows under downtown Indianapolis and is not accessible to the public.

Pogues Run

Stream Flow and Depth: Stream flow in Pogues Run is highly variable and is related to precipitation. Flow in Pogues Run is generally highest in the late winter and early spring and, occasionally, during the summer following intense rainfall. Both high and low stream flows can significantly affect water quality. During wet weather, most of the flow in Pogues Run comes from CSO outfalls. The U. S. Geological Survey does not maintain a gauging station on Pogues Run. However, the Pogues Run and Pleasant Run watersheds and flow characteristics are very similar, so professional knowledge of Pogues Run and USGS data for Pleasant Run were used to determine flow conditions on Pogues Run. Stream flow during wet weather is described in more detail under Factor 2 below.

Baseflow is minimal as a result of a heavily urbanized watershed, which results in very low flow conditions during dry months and high flows in response to runoff. Stream depth varies but is typically less than 1 foot deep during dry weather, according to the 2001 stream survey.

Substrate: In the upper reach, high runoff has created a very rocky substrate in much of this reach by removing most of the finer grained sediments. The scoured rocky substrate in dry weather is not a desirable wading area. In the lower reach, the substrate remains rocky as a result of high runoff flows, but bank instability leads to a buildup of silt during low flow periods. The silt builds up on the rocky substrate, also creating an undesirable and unsafe wading area due to the possibility of slipping or losing your footing.

Summary: Pogues Run has variable accessibility to the public. In some areas its dense vegetation, steep-to-medium slopes, and low stream flow make the waterway undesirable for partial- or full-body contact recreational activities. Dense vegetation covers the streambanks and discourages public access along 64 percent of the CSO-impacted area. Steep to moderate streambanks discourage access along approximately 34 percent of the area. Throughout the CSO area, Pogues Run is too shallow to support swimming by adults or children during dry weather, when people are most likely to seek out water recreation. The majority of the area has a depth between 6 and 12 inches during the recreational season.

2. Waters that are dangerous due to physical hazards such as swift currents, rapids, dams or shipping traffic

The U. S. Geological Survey does not maintain a gauging station on Pogues Run. However, the Pogues Run and Pleasant Run watersheds are very similar, so USGS data for Pleasant Run is used below. Wet weather events can transform the low flow nature of the stream into a dangerous and unsafe waterway, similar to Pleasant Run. Stream flows are dominated by combined sewer overflows and are not safe for recreational activities.

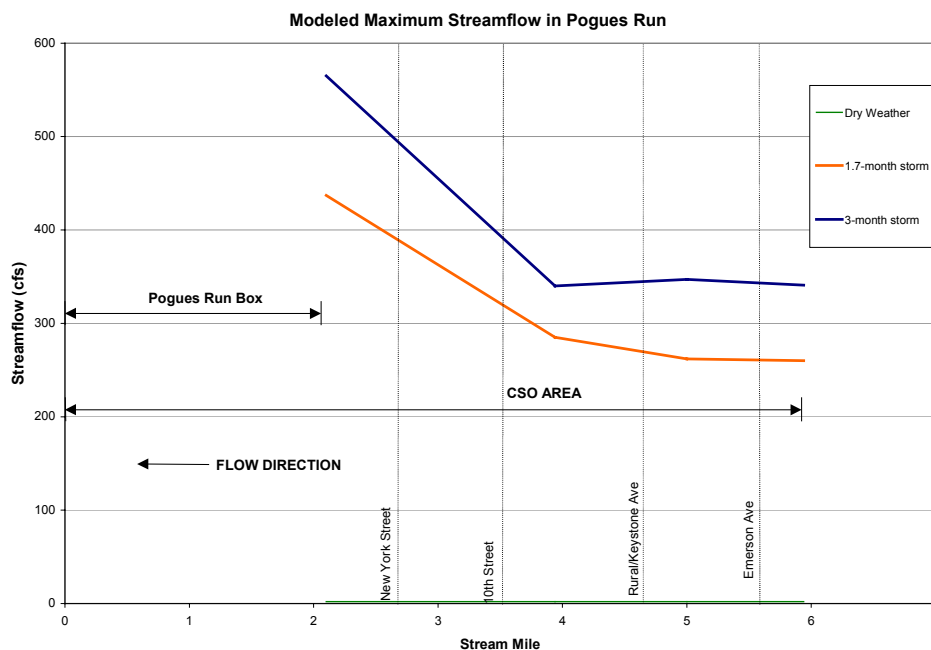
The first photograph below shows Pogues Run at low flow conditions in June 2001 downstream of Arsenal and 10th Street bridge near IPS School 101. The second photograph shows the same location immediately following a 1.25" rain event in October 2004. The clear water and low stream flows conducive to recreation have been replaced by fast-flowing, murky water following such a storm event.

Pogues Run



For purposes of the existing use determination, the city reviewed storm events greater than a 1.7-month storm. This storm was chosen as an example large storm that might not be controlled by the city's long-term control plan. Similar conditions in terms of flow, water quality, etc. would result from 2-month, 3-month or larger storms. As shown in the hydrograph below, modeled maximum stream flows due to a 1.7-month storm range from 260-440 cfs on Pogues Run. In comparison, modeled maximum stream flows due to a 3-month storm range from 340-565 cfs. During these infrequent storms, Pogues Run is not safe for recreation.

Pogues Run



One gauge of safety for water contact recreation is the safety of wading, since streams that are not safe for wading would also not be safe for swimming or other water contact activities. Each wader should know and strictly adhere to their personal wading abilities and limitations.

When stream flows are low, trained USGS employees measure stream discharge by wading into the stream. When stream flows are high or potentially dangerous, USGS hydrologists make discharge measurements using acoustic Doppler current meters deployed from a tethered boat. At the Arlington gauge on Pleasant Run, the USGS staff generally did not wade in flows above 16 cfs. Although USGS hydrologists occasionally waded at higher flows, they are equipped with a personal flotation device and have extensive wading safety training and experience. It would not be safe for an inexperienced person to wade the stream at such high flows. During rain events ranging from 1.7 months to 3 months, estimated stream flows range from 260 to 565 cfs and are too dangerous for wading or swimming.

Summary: Large storms create stream flows and velocities that are dangerous in Pogues Run, precluding use of the stream for water contact activities such as wading or swimming. These currents will continue to render Pogues Run unsafe for recreational activities during combined sewer overflow events. This data supports a finding of “no existing use” during storm events exceeding the 1.7-month storm on Pogues Run.

3. Limited extent of actual recreational uses

IDEM’s principles for making an existing use determination establish that “the occasional or incidental use by individual adults does not automatically establish an existing use for recreation.” (IDEM guidance, p. 51.) Therefore, the limited extent and frequency of actual uses of waterways should be a factor when determining whether a recreational use is an existing use. There are no community-sanctioned or privately owned recreational areas for swimming,

Pogues Run

kayaking or other recreational uses on the CSO-impacted portions of Pogues Run. However, some recreational uses do occur.

To establish the extent of actual recreational uses, the city conducted public meetings and a non-random face-to-face survey to collect data on how people use or have seen others use CSO-impacted waterways. Sources of information used by the city included:

- Physical stream survey in May-July 2001
- Public non-random intercept survey in June 2002 (Pogues Run Use Survey)
- Public outreach meetings with neighborhood associations, environmental activists and recreational groups in September-November 2002
- Marion County Health Department reports of stream use from 2001-2002
- Indy Parks stream use survey in October 2002

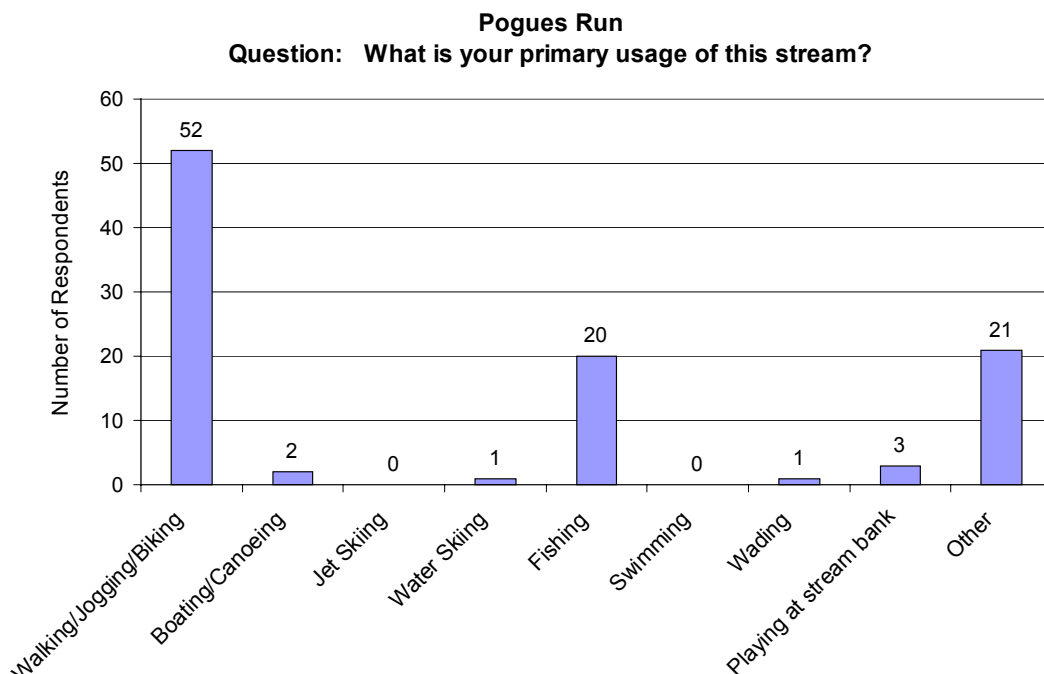
Location of Uses: Isolated recreational uses on Pogues Run in the CSO area are found predominantly along the parks and greenways located along this low-flow, neighborhood stream. Based upon the above data sources, the city identified two reported fishing locations, 11 reported playing-at-stream-bank locations, 13 reported wading locations, and two reported swimming locations on Pogues Run. Wading and playing by the stream bank are reported at various spots along the greenways, including Forest Manor Park, Brookside Park, Spades Park, and Highland Park. Fishing also is reported, although the fishing reported in this small stream involves hunting for crayfish rather than traditional sport fishing. Swimming is reported in two locations, although stream flows are too low to support full-body contact along most of Pogues Run. One small swimming hole was reported on Pogues Run in Brookside Park and another near Brookside Avenue. These are reportedly used occasionally by small numbers of neighborhood children. A map illustrating the observed and reported uses is located in Appendix C.

Extent of Uses: While some recreational activities do occur on Pogues Run within the CSO area, the number of people engaging in water contact activities and the frequency of those activities is limited. In the Pogues Run Use Survey, the primary recreational activity reported by people along Pogues Run was walking/jogging/biking (52 of 100 people surveyed). Less than 5 percent of respondents reported a primary use of swimming, wading or playing at stream bank, as shown in the graph below. For purposes of the survey, the following definitions were used:

- **Swimming:** Full-body contact with the water, including a high potential for swallowing the water (water should be deep enough to permit actual swimming)
- **Wading:** Partial body contact with the water (usually water contact to lower legs and possibly hands and arms)
- **Playing at the Stream Bank:** Kneeling, squatting or sitting at stream bank (some water contact may occur when hands reach into the water to touch or pick up something)
- **Fishing:** Fishing at the stream bank or from a boat (water contact occurs through handling fish and tackle)

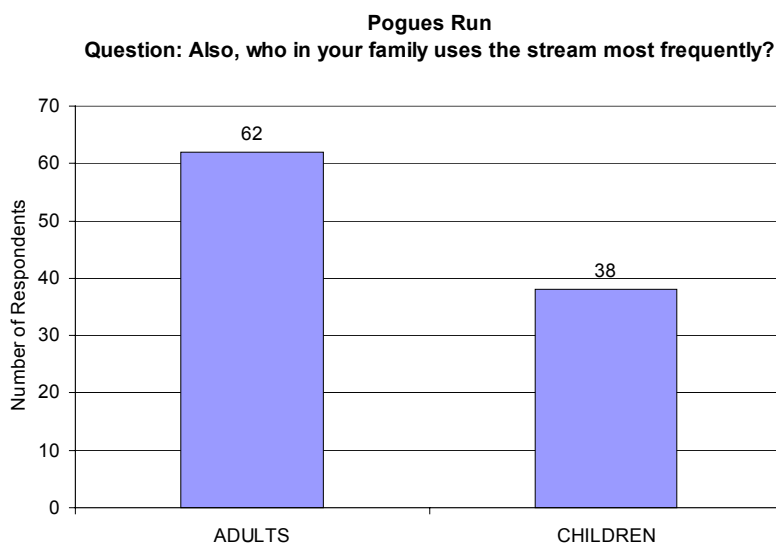
While the fishing definition above implies sport fishing, the fishing reported in this small stream usually involves hunting for crayfish.

Pogues Run



Note: Based upon personal interviews in 2002 with 100 people recreating, living or working near affected streams.

Also according to the survey, adults are more likely than children to use Pogues Run for recreational activities.



Note: Based upon personal interviews in 2002 with 100 people recreating, living or working near affected streams.

According to the survey and additional neighborhood meetings to confirm the survey's findings, swimming is observed or practiced much less frequently than activities that do not involve full-body contact. The full results of the Pogues Run Use Survey are located in Appendix D. Note that the survey results cannot be extrapolated to the city's general population. The survey was designed to identify people most likely to use the waterways and was not conducted using random sampling. Nor is the sample size large enough to warrant extrapolation of the results to the general population.

Pogues Run

Frequency of Use: In a typical year, 30 percent of the respondents reported participating in recreational activities along Pogues Run every week and 26 percent reported less than once a month. These recreational activities include both water-contact and non-water-contact activities.

Summary: The city used a variety of data sources and public participation methods to gather information on the extent and frequency of water recreation activities in and along Pogues Run. Based upon this information, the city identified a number of locations where recreational uses occur along Pogues Run. The primary use of this waterway for 52 percent of respondents is walking, jogging and/or biking along the greenways adjoining the stream. Swimming, wading and other water-contact activities are reported much less frequently. In two locations where swimming is reported to occur, it is said to involve small numbers of children from adjacent neighborhoods. There are no public or private bathing beaches along Pogues Run.

4. Limited extent of recreational use during or immediately after a significant wet weather event.

Little evidence exists of full-body or partial-body contact recreational uses of CSO-impacted portions of Pogues Run, especially after significant wet weather events. Where there is evidence of use, it is very infrequent. Most respondents to the Pogues Run Use Survey indicated that recreational usage within 24 hours after a rainfall is observed infrequently or not at all. Sixty-six percent said that, based on their experience, they have seen adults or children playing in the stream when the current is slow, compared to 15 percent who have seen children or adults playing in the stream when the current is fast. Eighty-six percent of the interviewees also reported that use is infrequent (only once or twice a month) within 24 hours after a rainfall. However, 39 percent of respondents reported observing children or adults playing in the stream during or within 24 hours after a rainfall. The survey did not characterize the size of the rainfall events after which recreation was observed. Based on the answer to the question about fast or slow currents, people are more likely to recreate during dry weather or after a light rain than a major storm. The evidence collected by the city indicates that recreational use is rare or non-existent during and after large storm events.

5. Unsafe water quality combined with municipal programs that prevent and control access to the water.

IDEM guidance notes that unsafe water quality and municipal programs to prevent and control access may be a factor in determining an existing use:

If the water quality is unsafe and access to the water is precluded by (a) existing impediments to physical access such as steep banks, fencing or high retaining walls, then IDEM will not presume an existing recreational use. In order for IDEM to determine that access is precluded by the municipality, the municipality must take steps to actively prevent adults and children from actually using the water. This requires the municipality to prevent and control access to the water and to conduct a reasonable proactive outreach media and educational program to prevent actual use during and immediately following a significant wet weather event. This presumption will not apply to recreational beaches open to the public and other swimming areas designated for public recreation. (IDEM guidance, p. 51.)

Pogues Run

Information on the city's programs to prevent and control access to CSO-impacted waterways is presented in the introduction section to this submittal. Information documenting unsafe water quality on Pogues Run is presented below.

Water Quality: To demonstrate there is no existing recreational use under this factor, the city should demonstrate that recreational water quality standards are not achieved within the CSO-impacted area of Pogues Run during storm events. The table below provides a summary of in-stream water quality data collected in the CSO area of Pogues Run from 2000 – 2002 by the Indianapolis Office of Environmental Services and the Marion County Health Department. Results are shown for all data, dry weather data only and wet weather data. The data show that during wet weather, the geometric mean within the CSO area in Pogues Run was 934 *E. coli* colonies/100 mL, exceeding the state's recreational use standard of 125 cfu/100 mL. Nearly 80 percent of samples taken in wet weather periods exceed the single sample standard of 235 cfu/100 mL.

Pogues Run *E. coli* Bacteria Compliance (CSO Area)

Data Source	Geometric Mean of 2000-2002 data ¹	% of Samples > 235 cfu/100 mL	Total Number of Samples
All Data	481	64.9%	536
Dry Weather Data	251	51.3%	271
Wet Weather Data	934	78.9%	265

⁽¹⁾ Indiana's standard for geometric mean is 125 cfu/100 mL.

To determine whether water quality standards are being met in the CSO area of Pogues Run, the city further analyzed in-stream water quality data collected in 2000-2002. Based upon a NetStorm simulation of LTCP Systemwide Control Plan 1, the city identified 17 storm events that would have resulted in untreated overflows if the city had installed CSO control facilities that achieve 95 percent capture. The city does not have data to correlate to all 17 storm events, since the city's existing sampling program is designed to collect data on a periodic basis without regard to weather conditions. However, on the days when existing 2000-2002 data could be correlated to an estimated overflow event, the data consistently show that the single sample maximum standard of 235 *E. coli* colonies/100 mL is not being met. This demonstrates that the CSO area of Pogues Run is unsafe for recreational use during and after those storm events. These types of storm events would have caused overflow events both before and after November 28, 1975, the date after which an existing use must be protected if it has been "attained."

Pogues Run

POGUES RUN COMPARISON OF ESTIMATED OVERFLOW EVENTS AND HISTORICAL E. COLI BACTERIA SAMPLING 2000-2002									
Estimated Overflow Event Date (93% Capture)	Date of Sample	New York OES (cfu/100 mL)	21st St OES (cfu/100 mL)	Brookside OES (cfu/100 mL)	21st St (cfu/100 mL)	Rural (cfu/100 mL)	10th St (cfu/100 mL)	New York (cfu/100 mL)	Average (cfu/100 mL)
4/7/00	4/7/00	N/A	N/A	N/A	1,900	700	1,200	3,300	1,800
5/26/00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7/4/00	7/5/00	N/A	N/A	N/A	3,000	7,500	8,000	8,000	6,600
8/17/00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
9/10/00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10/4/00	10/5/00	89,000	20,000	N/A	N/A	N/A	N/A	N/A	54,500
4/10/01	4/10/01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6/5/01	6/5/01	N/A	N/A	N/A	4,570	3,270	2,430	4,500	3,700
7/1/01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10/10/01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10/24/01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4/21/02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4/24/02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4/27/02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5/7/02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5/12/02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
9/20/02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
11/10/02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Estimated Overflow Dates: 1950-2003 NetSTORM Simulation for System Wide Plan 1, 93% Capture Level of Control.

Sampling Data: 2000 - 2002 instream *E. coli* bacteria sampling by OES and MCHD.

Note: Sampling data is presented only for dates on or following the estimated overflow event date, and for locations within the CSO area.

Summary

Although occasional recreational uses occur along CSO-impacted areas of Pogues Run, these should not be considered existing uses under 40 CFR 131.3(e) based upon the following factors:

1. Physical access and flow that are unsuitable for recreational use during large storm events, such as those exceeding a 1.7-month storm;
2. Waters that are dangerous during large storm events due to swift currents and rapids
3. Limited extent and frequency of actual recreational uses
4. Minimal recreational use during or immediately after significant wet weather events;
5. Unsafe water quality combined with extensive municipal programs to prevent and control access to the water following wet weather events.

Furthermore, the physical and water quality conditions of the CSO-impacted areas of Pogues Run make primary and secondary contact recreational activities unsuitable, undesirable, and unsafe during significant wet weather events. Based upon this data, we conclude that full-body or partial-body contact recreation is not an existing use of the CSO-impacted areas of Pogues Run during storm events exceeding the 1.7-month storm. Therefore, we request that IDEM affirm the city's conclusion and allow the city to proceed with a UAA to evaluate the attainable uses of the CSO area of Pogues Run during the periods and conditions under which we contemplate having residual overflows.

Appendices:

- A. Physical Stream Survey Maps and Tables
- B. See USGS hydrograph for Pleasant Run
- C. Pogues Run Recreational Use Map
- D. 2002 Pogues Run Use Survey

Reference:

U.S. Geological Survey, 1996. Low-Flow Characteristics of Indiana Streams. USGS Water Resources Investigation Report 96-4128. Page 130.

Information Supporting Pleasant Run/Bean Creek Existing Use Determination

Within the CSO area, some citizens occasionally use Indianapolis streams for full- or partial-body contact recreation, based upon surveys conducted by the City of Indianapolis. However, although actual recreational uses may occur on a sporadic basis, other factors preclude an existing use determination. Documentation supporting factors 1-4 on Pleasant Run is provided below and in the attachments.

The city is seeking a “no existing use” determination under 40 CFR 131.3(e) for the CSO area of Pleasant Run, which extends from 9th Street to the confluence with the White River, and of Bean Creek, from State Street to its confluence with Pleasant Run in Garfield Park.

1. Lack of proximity to residential neighborhoods, parks and schools and/or presence of physical hazards, access, flow or substrate that make such areas unsuitable for recreational use

IDEM’s principles for making an existing use determination note that physical access, flow and substrate are factors to consider. (IDEM guidance, p. 51) IDEM also recognizes that waters may be too shallow during dry periods to allow for adult swimming. The City of Indianapolis collected the information below on Pleasant Run’s physical access, flow and substrate to support IDEM’s existing use determination. The CSO-impacted portion of Bean Creek has much the same physical character as described for Pleasant Run.

Physical Access: During a physical stream survey in May-July 2001, the city collected data on the slopes of stream banks and presence of vegetation along CSO-impacted waterways. Maps and tables summarizing the data collected are provided in Appendix A. Although Pleasant Run is accessible in some areas, dense vegetation or steep slopes discourage use in other areas:

- Dense vegetation (dense brush) covers approximately 75 percent of the stream banks from Pleasant Run Golf Course to the confluence with White River. The rest of the area has 12 percent medium vegetation (some brush) and 13 percent light vegetation (grass).
- Steep slopes (greater than 1:1 ratio) discourage use for about 43 percent of the Pleasant Run stream bank; moderate slopes (approximately 1:1) affect about 28 percent of the stream bank in the CSO area.
- Approximately 50 percent of the stream flows through city parkland. The remainder flows through urban and industrial areas.

Between 10th Street and Bluff Road, Pleasant Run flows through Pleasant Run Golf Course, 3 city parks (Ellenberger, Christian, and Garfield) and the wide Pleasant Run Greenway. Dense vegetation and steep slopes limit accessibility in some locations. However, there are access points used by the public in the parks and along the greenway. From English Avenue to Prospect Street, Pleasant Run flows through the Citizens Gas and Coke Utility property. Throughout the Citizen’s Gas facility there is light vegetation along the stream and steep, unstable banks. Pleasant Run is not accessible to the public as it flows through the Citizen’s Gas complex.

Bluff Road to White River is a short (approximately 0.5 mile) downstream section of Pleasant Run that has been channelized. This reach runs through the Bluff Road industrial corridor. Streamside vegetation is primarily invasive bush honeysuckle with some areas of mown turfgrass. Stream banks in this reach are steep and unstable; erosional slumps are common. This reach of Pleasant Run is fairly accessible. Dense vegetation can limit access at some points, but that

Pleasant Run/Bean Creek

vegetation is not continuous. There is some limited accessibility near the Bluff Road industrial corridor.

Stream Flow and Depth: Stream flow in Pleasant Run is highly variable and is related to precipitation. Flow in Pleasant Run is generally highest in the late winter and early spring and, occasionally, during the summer following intense rainfall. Both high and low stream flows can significantly affect water quality. During wet weather, most of the flow in Pleasant Run comes from CSO outfalls. To demonstrate the variability in flow, a hydrograph of U.S. Geological Survey flow gauge data is provided in Appendix B. Stream flow during wet weather is described in more detail under Factor 2 below.

Stream depth varies in the CSO-impacted portions of Pleasant Run and Bean Creek, ranging from 6 inches to 1 foot deep during dry weather.

Substrate: The substrate in Pleasant Run is mostly sand, rocks, and pebbles. Although the substrate in Pleasant Run is suitable for wading, dense vegetation and steep to moderate streambanks limit the access to most of these areas.

Summary: Although Pleasant Run is accessible to the public in some areas, its dense vegetation, steep-to-medium slopes, and low stream flow make the waterway undesirable for full-body or partial-body contact recreational activities. Dense vegetation covers the streambanks and discourages public access along 75 percent of the CSO-impacted area. Steep to moderate streambanks discourage access along approximately 70 percent of the area. Throughout the CSO area, most of Pleasant Run is too shallow to support swimming by adults or children during dry weather, when people are most likely to seek out water recreation. The majority of the area has a depth between 6 and 12 inches during the recreational season.

2. Waters that are dangerous due to physical hazards such as swift currents, rapids, dams or shipping traffic

The U.S. Geological Survey maintains a gauging station on Pleasant Run at Arlington Avenue (i.e., 7.9 river-miles upstream of its mouth). The drainage area above this gauging station is 7.58 square miles. Based on low flow measurements taken from 1943-1993, the Q7-10 is 0.1 cubic feet per second (cfs). The average flow for Pleasant Run at the USGS gauge is 8.17 cfs (USGS, 1996). Wet weather events can transform the low flow nature of the stream into a dangerous waterway, as shown in the photographs below. The first photograph shows an area known locally as “Pleasant Run Falls” during dry weather. Note the extremely low stream flow at the far right hand corner of the photograph.

Pleasant Run/Bean Creek

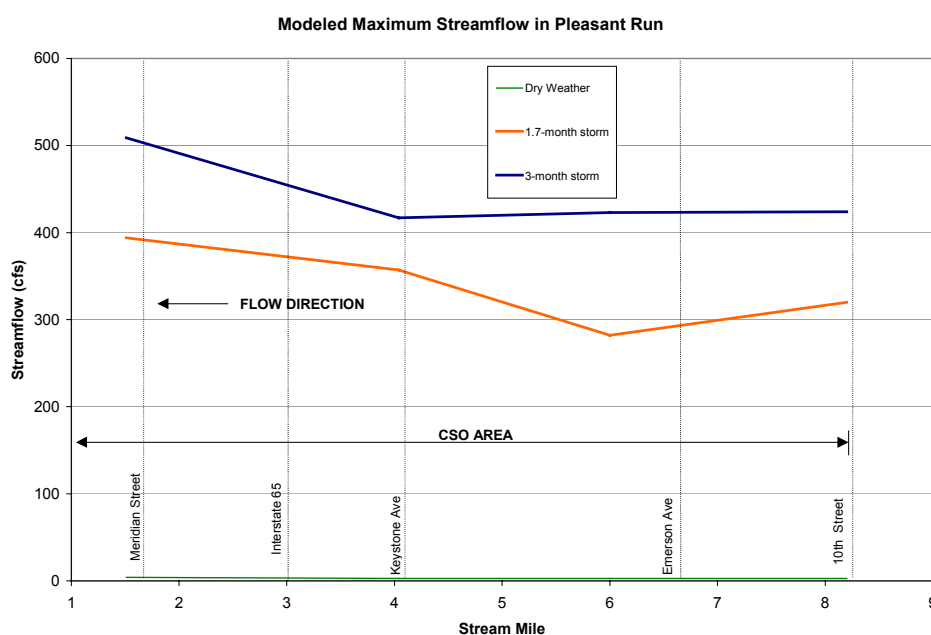


The photograph below shows the same location following a 1.91-inch rainfall. Stream flows are dominated by discharges from combined sewer overflows and are too dangerous for recreational activities.



Pleasant Run/Bean Creek

For purposes of the existing use determination, the city reviewed storm events greater than a 1.7-month storm. This storm was chosen as an example large storm that might not be controlled by the city's long-term control plan. Similar conditions in terms of flow, water quality, etc. would result from 2-month, 3-month or larger storms. As shown in the hydrograph below, estimated maximum stream flows due to a 1.7-month storm range from 280-395 cfs in the CSO area of Pleasant Run. In comparison, modeled maximum stream flows due to a 3-month storm range from 415-510 cfs. During these infrequent storms, Pleasant Run and Bean Creek are not safe for recreation.



One gauge of safety for water contact recreation is the safety of wading, since streams that are not safe for wading would also not be safe for swimming or other full-body or partial-body contact activities. Each wader should know and strictly adhere to their personal wading abilities and limitations.

When stream flows are low, trained USGS employees measure stream discharge by wading into the stream. When stream flows are high or potentially dangerous, USGS hydrologists make discharge measurements using acoustic Doppler current meters deployed from a tethered boat. At the Arlington gauge on Pleasant Run, the USGS staff generally did not wade in flows above 16 cfs. Although USGS hydrologists occasionally waded at higher flows, they are equipped with a personal flotation device and have extensive wading safety training and experience. It would not be safe for an inexperienced person to wade the stream at such high flows. During rain events ranging from 1.7 months to 3 months, estimated stream flows range from 280 to 510 cfs and are too dangerous for wading. Although wading is reported in some locations along Pleasant Run and Bean Creek, it is not known to occur during stream flows occurring from a 1.7-month storm or greater.

Summary: Large storms create high stream flows that are dangerous in Pleasant Run and Bean Creek, precluding use of the streams for water contact activities such as wading or swimming. These currents will continue to render Pleasant Run and Bean Creek unsafe for recreational activities during combined sewer overflow events. This data supports a finding of “no existing use” during storm events exceeding the 1.7-month storm on Pleasant Run and Bean Creek.

3. Limited extent of actual recreational uses

IDEM's principles for making an existing use determination establish that "the occasional or incidental use by individual adults does not automatically establish an existing use for recreation." (IDEM guidance, p. 51.) Therefore, the limited extent and frequency of actual uses of waterways should be a factor when determining whether a recreational use is an existing use. There are no community-sanctioned or privately owned recreational areas for swimming, kayaking or other recreational uses on the CSO-impacted portions of Pleasant Run and Bean Creek. However, some recreational uses do occur.

To establish the extent of actual recreational uses, the city conducted public meetings and a non-random face-to-face survey to collect data on how people use or have seen others use CSO-impacted waterways. Sources of information used by the city included:

- Physical stream survey in May-July 2001
- Public non-random intercept survey in June 2002 (Pleasant Run Use Survey)
- Public outreach meetings with neighborhood associations, environmental activists and recreational groups in September-November 2002
- Marion County Health Department reports of stream use from 2001-2002
- Indy Parks stream use survey in October 2002

Location of Uses: Isolated recreational uses on Pleasant Run and Bean Creek in the CSO area are found predominantly along the many parks and greenways located along this low-flow, neighborhood stream. Based upon the above data sources, the city identified two reported fishing locations, 16 reported playing-at-stream-bank locations, 9 reported wading locations, and three reported swimming locations on Pleasant Run. Wading and playing by the stream bank are reported at various spots along the greenways, including Pleasant Run Golf Course, Ellenberger Park, Christian Park, and Garfield Park. Fishing also is reported, although the fishing reported in this small stream involves hunting for crayfish rather than traditional sport fishing. Swimming is reported in three locations, although stream flows are too low to support full-body contact along most of Pleasant Run/Bean Creek. One small swimming hole was reported on Pleasant Run downstream of Prospect Street and another along Bean Creek near Keystone Avenue. These are reportedly used occasionally by small numbers of neighborhood children. A third reported swimming hole, between Meridian and Bluff, is believed to refer to a gravel pit just north of Pleasant Run and not physically linked to its waters. A map illustrating the observed and reported uses is located in Appendix C.

Extent of Uses: While some recreational activities do occur on Pleasant Run/Bean Creek within the CSO area, the number of people engaging in water contact activities and the frequency of those activities is limited. In the Pleasant Run Use Survey, the primary recreational activity reported by people along Pleasant Run was walking/jogging/biking (82 of 100 people surveyed). Less than 5 percent of respondents reported a primary use of fishing, swimming, wading or playing at stream bank, as shown in the graph below. For purposes of the survey, the following definitions were used:

- **Swimming:** Full-body contact with the water, including a high potential for swallowing the water (water should be deep enough to permit actual swimming)
- **Wading:** Partial body contact with the water (usually water contact to lower legs and possibly hands and arms)

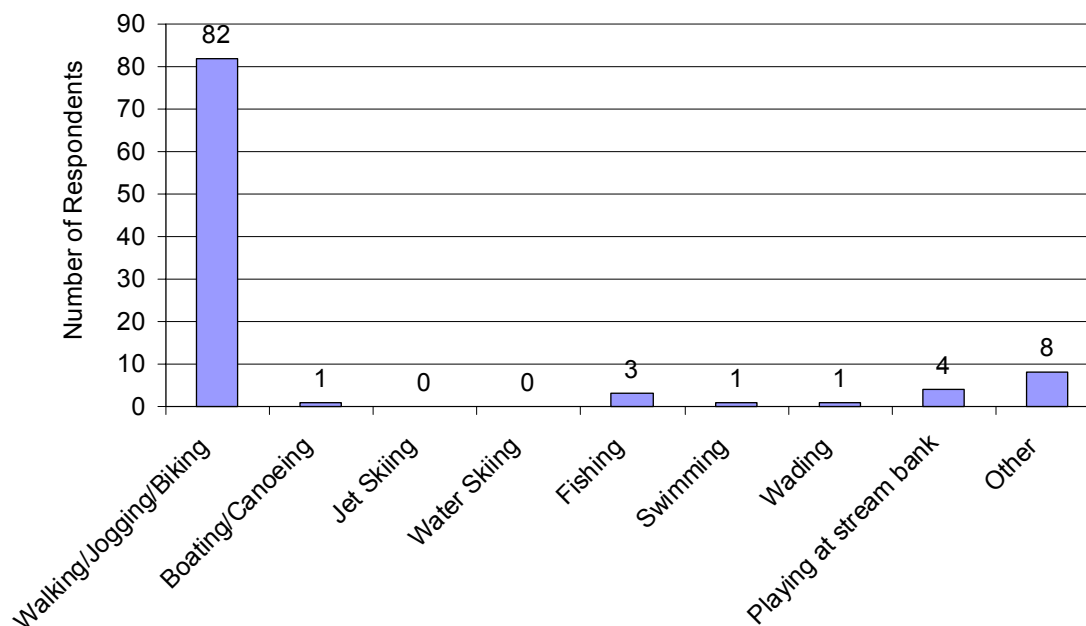
Pleasant Run/Bean Creek

- **Playing at the Stream Bank:** Kneeling, squatting or sitting at stream bank (some water contact may occur when hands reach into the water to touch or pick up something)
- **Fishing:** Fishing at the stream bank or from a boat (water contact occurs through handling fish and tackle)

While the fishing definition above implies sport fishing, the fishing reported in this small stream usually involves hunting for crayfish.

Pleasant Run/Bean Creek

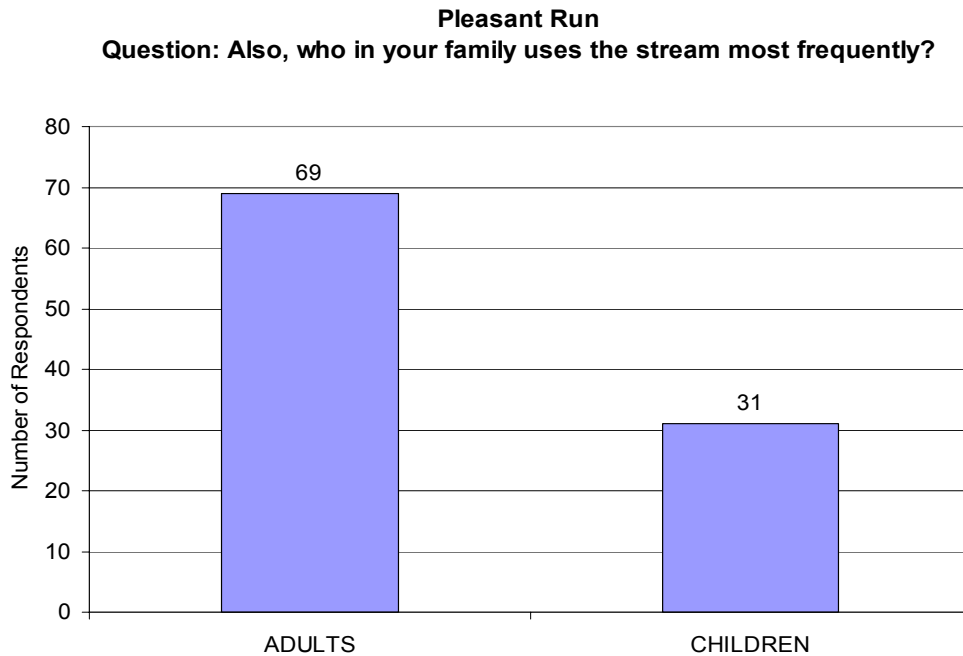
Pleasant Run
Question: What is your primary usage of this stream?



Note: Based upon personal interviews in 2002 with 100 people recreating, living or working near affected streams.

Pleasant Run/Bean Creek

Also according to the survey, adults are more likely than children to use Pleasant Run for recreational activities.



Note: Based upon personal interviews in 2002 with 100 people recreating, living or working near affected streams.

According to the survey and additional neighborhood meetings to confirm the survey's findings, swimming is observed or practiced much less frequently than activities that do not involve full-body contact. The full results of the Pleasant Run/Bean Creek Use Survey are located in Appendix D. Note that the survey results cannot be extrapolated to the city's general population. The survey was designed to identify people most likely to use the waterways and was not conducted using random sampling. Nor is the sample size large enough to warrant extrapolation of the results to the general population.

Frequency of Use: In a typical year, 47 percent of the respondents reported participating in recreational activities along Pleasant Run every week and 13 percent reported less than once a month. These recreational activities include both water-contact and non-water-contact activities.

Summary: The city used a variety of data sources and public participation methods to gather information on the extent and frequency of water recreation activities in and along Pleasant Run. Based upon this information, the city identified a number of locations where recreational uses occur along Pleasant Run. The primary use of this waterway for 82 percent of respondents is walking, jogging and/or biking along the greenways adjoining the stream. Swimming, wading and other water-contact activities are reported much less frequently. In two locations where swimming is reported to occur, it is said to involve small numbers of children from adjacent neighborhoods. There are no public or private bathing beaches along Pleasant Run or Bean Creek.

4. Limited extent of recreational use during or immediately after a significant wet weather event.

Little evidence exists of full-body or partial-body contact recreational uses of CSO-impacted portions of Pleasant Run and Bean Creek, especially after significant wet weather events. Where there is evidence of use, it is very infrequent. Most respondents to the Pleasant Run/Bean Creek Use Survey indicated that recreational usage within 24 hours after a rainfall is observed infrequently or not at all. Eight-four percent said that, based on their experience, they have seen adults or children playing in the stream when the current is slow, compared to 11 percent who have seen children or adults playing in the stream when the current is fast. Sixty-nine percent of the interviewees also reported that use is infrequent (only once or twice a month) within 24 hours after a rainfall. However, 66 percent of respondents reported observing children or adults playing in the stream during or within 24 hours after a rainfall. The survey did not characterize the size of the rainfall events after which recreation was observed. Based on the answer to the question about fast or slow currents, people are more likely to recreate in dry weather or after a light rain than a major storm. The evidence collected by the city indicates that recreational use is rare or non-existent during and after large storm events.

5. Unsafe water quality combined with municipal programs that prevent and control access to the water.

IDEM guidance notes that unsafe water quality and municipal programs to prevent and control access may be a factor in determining an existing use:

If the water quality is unsafe and access to the water is precluded by (a) existing impediments to physical access such as steep banks, fencing or high retaining walls, then IDEM will not presume an existing recreational use. In order for IDEM to determine that access is precluded by the municipality, the municipality must take steps to actively prevent adults and children from actually using the water. This requires the municipality to prevent and control access to the water and to conduct a reasonable proactive outreach media and educational program to prevent actual use during and immediately following a significant wet weather event. This presumption will not apply to recreational beaches open to the public and other swimming areas designated for public recreation. (IDEM guidance, p. 51.)

Information on the city's programs to prevent and control access to CSO-impacted waterways is presented in the introduction section to this submittal. Information documenting unsafe water quality on Pleasant Run and Bean Creek is presented below.

Water Quality: To demonstrate there is no existing recreational use under this factor, the city should demonstrate that recreational water quality standards are not achieved within the CSO-impacted area of Pleasant Run and Bean Creek during storm events. The table below provides a summary of in-stream water quality data collected in the CSO area of Pleasant Run and Bean Creek from 2000 – 2002 by the Indianapolis Office of Environmental Services and the Marion County Health Department. Results are shown for all data, dry weather data only and wet weather data. The data show that during wet weather, the geometric mean within the CSO area in Pleasant Run was 676 *E. coli* colonies/100 mL and in Bean Creek was 625 *E. coli* colonies/100 mL, both exceeding the state's recreational use standard of 125 cfu/100 mL. More than 66 percent of Pleasant Run samples and 72 percent of Bean Creek samples taken in wet weather periods exceed the single sample standard of 235 cfu/100 mL.

Pleasant Run/Bean Creek

Pleasant Run and Bean Creek *E. coli* Bacteria Compliance (CSO Area)

Data Source	Geometric Mean of 2000-2002 data ¹	% of Samples > 235 cfu/100 mL	Total Number of Samples
Pleasant Run -All Data	413	59.5%	862
Bean Creek - All Data	466	71.3%	178
Pleasant Run - Dry Weather Data	269	53.8%	461
Bean Creek - Dry Weather Data	346	70.5%	88
Pleasant Run - Wet Weather Data	676	66.1%	401
Bean Creek - Wet Weather Data	625	72.2%	90

⁽¹⁾ Indiana's standard for geometric mean is 125 cfu/100 mL.

To determine whether water quality standards are being met in the CSO area of Pleasant Run and Bean Creek during or after large storm events, the city further analyzed in-stream water quality data collected in 2000-2002. Based upon a NetStorm simulation of LTCP Systemwide Control Plan 1, the city identified 17 storm events that would have resulted in untreated overflows if the city had installed CSO control facilities that achieve 93 percent capture. The city does not have data to correlate to all 17 storm events, since the city's existing sampling program is designed to collect data on a periodic basis without regard to weather conditions. However, on the days when existing 2000-2002 data could be correlated to an estimated overflow event, the data consistently show that the single sample maximum standard of 235 *E. coli* colonies/100 mL is not being met. This demonstrates that the CSO area of Pleasant Run and Bean Creek are unsafe for recreational use during and after those storm events. These types of storm events would have caused overflow events both before and after November 28, 1975, the date after which an existing use must be protected if it has been "attained."

PLEASANT RUN COMPARISON OF ESTIMATED OVERFLOW EVENTS AND HISTORICAL <i>E. COLI</i> BACTERIA SAMPLING 2000-2002								
Estimated Overflow Event Date (93% Capture)	Date of Sample	Meridian St OES (cfu/100 mL)	Arlington (cfu/100 mL)	Southeastern (cfu/100 mL)	Barth (cfu/100 mL)	Garfield Park (cfu/100 mL)	Bluff (cfu/100 mL)	Average (cfu/100 mL)
4/7/00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5/26/00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7/4/00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8/17/00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
9/10/00	9/11/00	N/A	4,190	6,090	6,090	4,410	5,560	5,300
10/4/00	10/5/00	108,000	N/A	N/A	N/A	N/A	N/A	N/A
4/10/01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6/5/01	6/6/01	N/A	46,110	77,010	81,640	92,080	64,880	72,300
7/1/01	7/2/01	N/A	17,250	36,090	36,540	17,230	15,290	24,500
10/10/01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10/24/01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4/21/02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4/24/02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4/27/02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5/7/02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5/12/02	5/13/02	8,000	N/A	3,160	4,800	4,800	9,200	6,000
9/20/02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
11/10/02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Estimated Overflow Dates: 1950-2003 NetSTORM Simulation for System Wide Plan 1, 93% Capture Level of Control.

Sampling Data: 2000 - 2002 instream *E. coli* bacteria sampling by OES and MCHD.

Note: Sampling data is presented only for dates on or following the estimated overflow event date, and for locations within the CSO area.

Pleasant Run/Bean Creek

BEAN CREEK COMPARISON OF ESTIMATED OVERFLOW EVENTS AND HISTORICAL E. COLI BACTERIA SAMPLING 2000-2002					
Estimated Overflow Event Date (93% Capture)	Date of Sample	Southern - OES (cfu/100 mL)	Garfield Park - OES (cfu/100 mL)	Garfield Park (cfu/100 mL)	Average (cfu/100 mL)
4/7/00	N/A	N/A	N/A	N/A	N/A
5/26/00	N/A	N/A	N/A	N/A	N/A
7/4/00	N/A	N/A	N/A	N/A	N/A
8/17/00	N/A	N/A	N/A	N/A	N/A
9/10/00	9/11/00	N/A	N/A	7,940	N/A
10/4/00	10/5/00	40,000	200,000	N/A	120,000
4/10/01	N/A	N/A	N/A	N/A	N/A
6/5/01	6/6/01	N/A	N/A	16,640	N/A
7/1/01	7/2/01	N/A	N/A	31,300	N/A
10/10/01	N/A	N/A	N/A	N/A	N/A
10/24/01	N/A	N/A	N/A	N/A	N/A
4/21/02	N/A	N/A	N/A	N/A	N/A
4/24/02	N/A	N/A	N/A	N/A	N/A
4/27/02	N/A	N/A	N/A	N/A	N/A
5/7/02	N/A	N/A	N/A	N/A	N/A
5/12/02	5/13/02	2,700	N/A	3,600	3,200
9/20/02	N/A	N/A	N/A	N/A	N/A
11/10/02	N/A	N/A	N/A	N/A	N/A

Source: Estimated Overflow Dates: 1950-2003 NetSTORM Simulation for System Wide Plan 1,
93% Capture Level of Control.

Sampling Data: 2000 - 2002 instream *E. coli* bacteria sampling by OES and MCHD.

Note: Sampling data is presented only for dates on or following the estimated overflow event date,
and for locations within the CSO area.

Summary

Although occasional recreational uses occur along the CSO-impacted areas of Pleasant Run and Bean Creek, these should not be considered existing uses under 40 CFR 131.3(e) based upon the following factors:

1. Physical access and flow that are unsuitable for recreational use during large storm events, such as those exceeding a 1.7-month storm;
2. Waters that are dangerous during large storm events due to swift currents and rapids
3. Limited extent and frequency of actual recreational uses
4. Minimal recreational use during or immediately after significant wet weather events;
5. Unsafe water quality combined with extensive municipal programs to prevent and control access to the water following wet weather events.

Furthermore, the physical and water quality conditions of Pleasant Run downstream of 9th Street and Bean Creek downstream of State Street make primary and secondary contact recreational activities unsuitable, undesirable, and unsafe during significant wet weather events. Based upon this data, we conclude that full-body or partial-body contact recreation is not an existing use of Pleasant Run downstream of 9th Street or Bean Creek downstream of State Street during storm events exceeding the 1.7-month storm. Therefore, we request that IDEM affirm the city's

Pleasant Run/Bean Creek

conclusion and allow the city to proceed with a UAA to evaluate the attainable uses of the CSO area of Pleasant Run and Bean Creek during the periods and conditions under which we contemplate having residual overflows.

Appendices:

- A. Physical Stream Survey Maps and Tables
- B. USGS flow graph
- C. Pleasant Run Recreational Use Map
- D. 2002 Pleasant Run Use Survey

Reference:

U.S. Geological Survey, 1996. Low-Flow Characteristics of Indiana Streams. USGS Water Resources Investigation Report 96-4128. Page 130.

Information Supporting White River Existing Use Determination

Within the CSO area, some citizens occasionally use Indianapolis streams for full- or partial-body contact recreation, based upon surveys conducted by the City of Indianapolis. However, although actual recreational uses may occur on a sporadic basis, other factors preclude an existing use determination. Documentation supporting factors 1-4 on White River is provided below and in the attachments.

The city is seeking a “no existing use” determination under 40 CFR 131.3(e) for the area of the White River impacted by Indianapolis CSOs. This area extends from a location just west of East 56th Street and Westfield Boulevard on the Indianapolis northside to State Road 58 near Elnora, just south of the Greene-Davies county line in southwestern Indiana. See Figure 2-2a for the upstream boundary of the CSO area on White River.

1. Lack of proximity to residential neighborhoods, parks and schools and/or presence of physical hazards, access, flow or substrate that make such areas unsuitable for recreational use

IDEM’s principles for making an existing use determination note that physical access, flow and substrate are factors to consider. (IDEM guidance, p. 51) IDEM also recognizes that waters may be too shallow during dry periods to allow for adult swimming. The City of Indianapolis collected the following information on White River’s physical access, flow and substrate to support IDEM’s existing use determination:

Physical Access: During a physical stream survey in May-July 2001, the city collected data on the slopes of stream banks and presence of vegetation along CSO-impacted waterways inside Marion County. Maps and tables summarizing the data collected are provided in Appendix A. Although White River is accessible in some places, dense vegetation or steep slopes discourage use in other areas:

- Dense vegetation (dense brush) covers approximately 72 percent of the stream banks from Holliday Park to just south of I-465. The rest of the area has 12 percent medium vegetation (some brush) and 16 percent light vegetation (grass).
- Steep slopes (greater than 1:1 ratio) discourage use for about 31 percent of the White River stream bank; moderate slopes (approximately 1:1) affect about 29 percent of the stream bank in the CSO area.
- White River flows through city parkland, state parkland, residential, urban, industrial and agricultural areas.

Land use along the White River between Holliday Park and 42nd Street tends to be primarily low density residential. Much of the channel in this section is tree lined. Stream accessibility is mixed in this reach. While accessibility is good in public areas such as Holliday and Friedman Parks, much of this reach flows through low-density residential areas where access is restricted to individual landowners and their neighbors.

Between 42nd Street and 16th Street, land use is mixed, with much of the river bordered by city parks and golf courses. The central portion of this section, upstream of the dam, is locally known as Lake Indy. This portion of the river is very accessible as it flows through city parks and golf courses. There is a public boat launch in Riverside Park.

White River

The section from the Emrichsville Dam at 16th Street to Morris Street is the most urban portion of the White River in Indianapolis. Land use in this section is high density residential, mixed industry, and mixed urban. The floodplain in this section is restricted by the levees; much of the floodplain is maintained as turfgrass, with few trees along the channel. White River State Park also is located along this stream reach. Accessibility is mixed in this reach. While the levees are steep, there are frequent unofficial access points that allow vehicles onto the floodplain. Along the east bank of the river in the lower portions of this reach access is restricted by industrial development.

From Morris Street south to County Line Road, the White River begins to lose its urban character. The river begins to meander downstream of Stout Dam, and pool and riffle sequences begin to develop. Land use in this section is predominately aggregate mining and agriculture with some light residential. The aggregate mining and industry in the area limit access to the river in this section.

Stream Flow and Depth: Stream flow in White River is highly variable and is related to precipitation. Flow in White River is generally highest in the late winter and early spring and, occasionally, during the summer following intense rainfall. Both high and low stream flows can significantly affect water quality. To demonstrate the variability in flow, a hydrograph of U.S. Geological Survey flow gauge data is provided in Appendix B. Stream flow during wet weather is described in more detail under Factor 2 below.

Stream depth varies in the CSO-impacted portions of White River, ranging from 2-3 feet in most areas during dry weather, according to the 2001 stream survey conducted within Marion County. However, pools in some locations can be greater than 10 feet in depth. Currents in the stream also can be strongest in the deepest parts of the channel.

Substrate: The substrate in the downtown area (from the 16th Street Dam to the Perry K Dam) is silt and does not encourage wading. In areas of the White River where the substrate consists mostly of sand, rocks and pebbles and is suitable for wading, most of the associated streambanks have a high slope and are covered by dense vegetation that discourages public access.

Summary: Although White River is accessible to the public in some areas, its dense vegetation and steep-to-medium slopes make the waterway undesirable for full-body or partial-body contact recreational activities. Dense vegetation covers the streambanks and discourages public access along 72 percent of the CSO-impacted area. Steep to moderate streambanks discourage access along approximately 60 percent of the area.

2. Waters that are dangerous due to physical hazards such as swift currents, rapids, dams or shipping traffic

The U.S. Geological Survey maintains a gauging station on the White River at the Morris Street Bridge at river-mile 230.3 (i.e., 2.6 river-miles downstream from Fall Creek, 3.4 river-miles upstream from Eagle Creek and 4.0 river-miles upstream from Indianapolis Power and Light dam). Wet weather events can transform the nature of the river into a dangerous waterway, as shown in the photographs below.

The first photograph shows an area looking downstream from Perry K dam during dry weather. Note the sandbank at the far side of the stream in the photograph.

White River

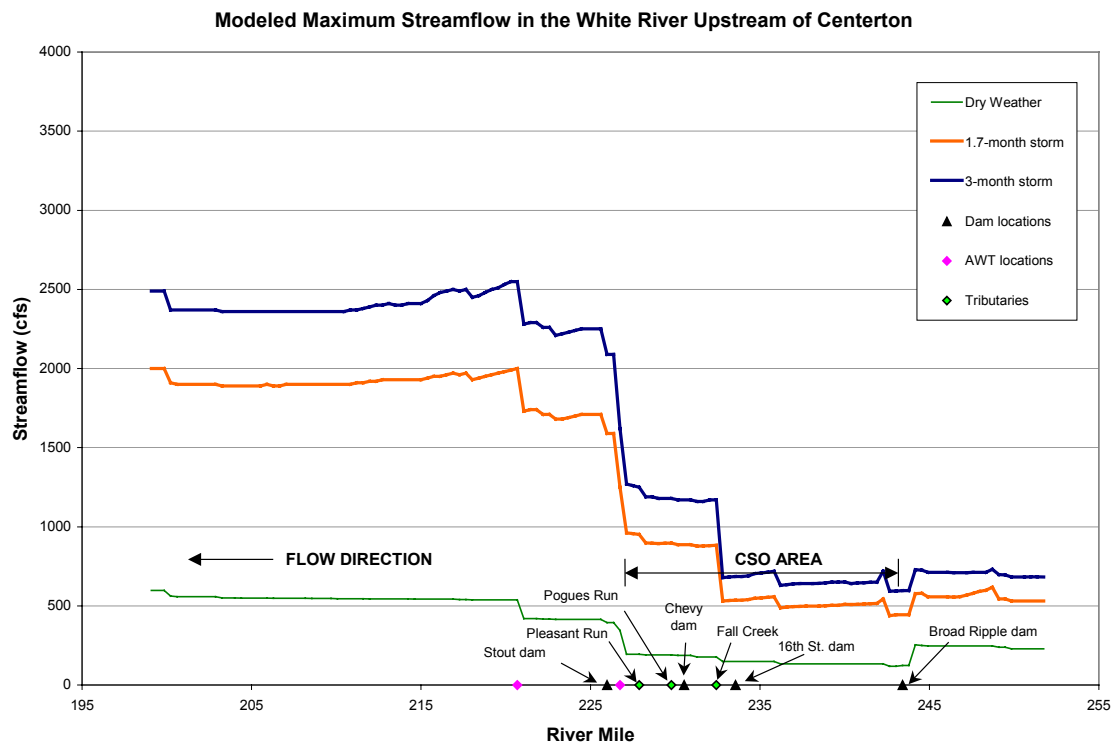


The photograph below shows the same location following approximately 1.1 inches of rainfall. Stream flows during wet weather event generate undertows and surface currents that are too dangerous for full-body or partial-body contact recreational activities.



For purposes of the existing use determination, the city reviewed storm events greater than a 1.7-month storm. This storm was chosen as an example large storm that might not be controlled by the city's long-term control plan. Similar conditions in terms of flow, water quality, etc. would result from 2-month, 3-month or larger storms. As shown in the hydrograph below, modeled maximum stream flows due to a 1.7-month storm range from 440-2000 cfs in White River. In comparison, modeled maximum stream flows due to a 3-month storm range from 595 to 2550 cfs. During these infrequent storms, White River is not safe for recreation.

White River



One gauge of safety for water contact recreation is the safety of wading, since streams that are not safe for wading would also not be safe for swimming or other water contact activities. Each wader should know and strictly adhere to their personal wading abilities and limitations.

When stream flows are low, trained USGS employees measure stream discharge by wading into the stream. When stream flows are high or potentially dangerous, USGS hydrologists make discharge measurements using acoustic Doppler current meters deployed from a tethered boat. At the Morris Street gauge, the USGS staff generally did not wade in flows above 540 cfs. Although USGS hydrologists occasionally waded at higher flows, they are equipped with a personal flotation device and have extensive wading safety training and experience. It would not be safe for an inexperienced person to wade the stream at such high flows. During rain events ranging from 1.7 months to 3 months, estimated stream flows range from 440-2550 cfs and are too dangerous for wading. Although wading and swimming are reported in some locations within the CSO-impacted areas of White River, they are not known to occur extensively or frequently under stream flows occurring from a 1.7-month storm or greater.

Summary: Large storms create stream flows and velocities that are dangerous in White River, precluding use of the stream for water contact activities such as wading or swimming. These currents will continue to render White River unsafe for recreational activities during combined sewer overflow events. This data supports a finding of “no existing use” during storm events exceeding the 1.7-month storm on White River.

3. Limited extent of actual recreational uses

IDEM’s principles for making an existing use determination establish that “the occasional or incidental use by individual adults does not automatically establish an existing use for

White River

recreation.” (IDEM guidance, p. 51.) Therefore, the limited extent and frequency of actual uses of waterways should be a factor when determining whether a recreational use is an existing use. There are no community-sanctioned or privately owned recreational areas for swimming on the CSO-impacted portions of White River. There is one city-owned boat launch in Marion County within the CSO area and approximately seven state-authorized public access points downstream of Marion County. The city’s research has shown that recreational uses do occur on White River, but not extensively or frequently during or after large storm events.

To establish the extent of actual recreational uses, the city conducted public meetings and a non-random face-to-face survey to collect data on how people use or have seen others use CSO-impacted waterways. Sources of information used by the city included:

- Physical stream survey in May-July 2001
- Public non-random intercept survey in June 2002 (White River Use Survey)
- Public outreach meetings with neighborhood associations, environmental activists and recreational groups in September-November 2002
- Marion County Health Department reports of stream use from 2001-2002
- Indy Parks stream use survey in October 2002
- Downstream County and State Agencies Survey

Location of Uses: Recreational uses on White River in the CSO area within Marion County are found predominantly along the many parks and greenways located along this low-flow river. Based upon the above data sources, the city identified 43 reported fishing locations, nine reported playing-at-stream-bank locations, 15 reported wading locations, 10 reported private canoe launch areas, two boat launches and five reported swimming locations on White River. A map illustrating the observed and reported uses is located in Appendix C.

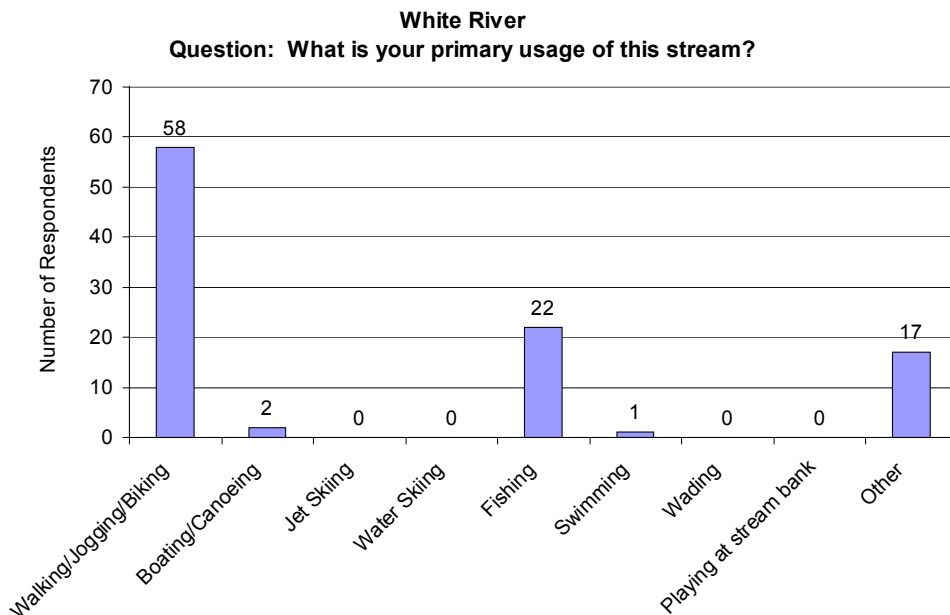
In October 2002, DPW sent written survey instruments to downstream county health departments, parks departments and government offices in Daviess, Greene, Johnson, Knox, Morgan, and Owen counties. Surveys also were sent to McCormick Creek State Park, as well as the Department of Natural Resources Headquarters in Districts 5-7. Nine completed surveys were returned and included in the city’s database.

Recreational uses on White River downstream of White River were reported predominantly along parks, public access points, and towns. Based upon the above data sources, the city identified 10 reported fishing locations, six reported playing-at-stream-bank locations, four reported wading locations, five reported canoe launch areas, five reported boat launches, two reported swimming locations, and one duck hunting location. Swimming also was reported near McCormick Creek State Park and at Bloomfield. However, the city knows of no public swimming beaches along the river within this area. Downstream from Bloomfield land use is primarily agricultural and fewer water contact recreational uses were reported to the city. A map illustrating the observed and reported uses downstream of Marion County is located in Appendix C.

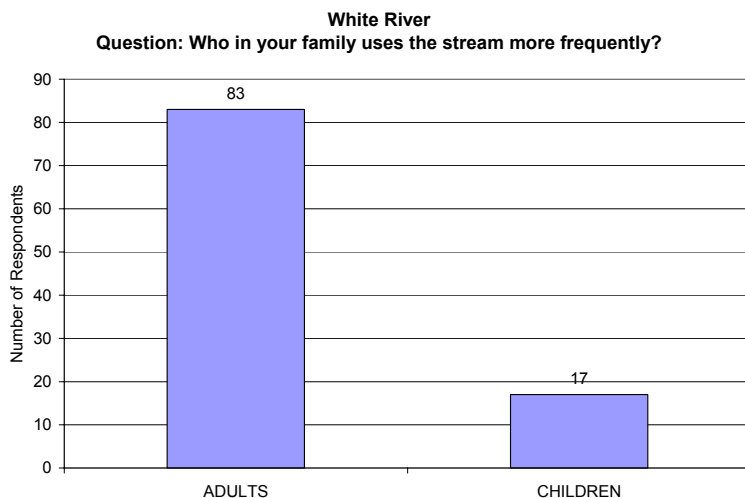
Extent of Uses: While some recreational activities do occur on White River within the CSO area, the number of people engaging in water contact activities and the frequency of those activities is limited. In the White River Use Survey, the primary recreational activity reported by people along White River in Marion County was walking/jogging/biking (58 of 100 people surveyed). Approximately 23 percent of respondents reported a primary use of fishing, swimming, wading or playing at stream bank, as shown in the graph below. For purposes of the survey, the following definitions were used:

White River

- **Swimming:** Full-body contact with the water, including a high potential for swallowing the water (water should be deep enough to permit actual swimming)
- **Wading:** Partial body contact with the water (usually water contact to lower legs and possibly hands and arms)
- **Playing at the Stream Bank:** Kneeling, squatting or sitting at stream bank (some water contact may occur when hands reach into the water to touch or pick up something)
- **Fishing:** Fishing at the stream bank or from a boat (water contact occurs through handling fish and tackle)



Note: Based upon personal interviews in 2002 with 100 people recreating, living or working near affected streams.



Note: Based upon personal interviews in 2002 with 100 people recreating, living or working near affected streams.

Also according to the survey, adults are more likely than children to use White River for recreational activities.

White River

According to the survey and additional neighborhood meetings to confirm the survey's findings, swimming is observed or practiced much less frequently than activities that do not involve full-body contact. The full results of the White River Use Survey are located in Appendix D. Note that the survey results cannot be extrapolated to the city's general population. The survey was designed to identify people most likely to use the waterways and was not conducted using random sampling. Nor is the sample size large enough to warrant extrapolation of the results to the general population.

Frequency of Use: In a typical year, 36 percent of the respondents reported participating in recreational activities along White River in Marion County every week and 27 percent reported less than once a month. These activities include both water-contact and non-water-contact activities.

Summary: The city used a variety of data sources and public participation methods to gather information on the extent and frequency of water recreation activities in and along White River. Based upon this information, the city identified a number of locations where recreational uses occur along White River in Marion County and downstream in CSO-impacted areas. The primary use of this waterway for 58 percent of respondents is walking, jogging and/or biking along the greenways adjoining the stream. Swimming, wading and other water-contact activities are reported much less frequently. There are no public or private bathing beaches within the CSO-impacted areas of White River.

4. Limited extent of recreational use during or immediately after a significant wet weather event.

Little evidence exists of full-body or partial-body contact recreational uses of CSO-impacted portions of White River, especially after significant wet weather events. Where there is evidence of use, it is very infrequent. Most respondents to the White River Use Survey indicated that recreational usage within 24 hours after a rainfall is observed infrequently or not at all. Fifty-eight percent said that, based on their experience, they have seen adults or children playing in the stream when the current is slow, compared to 29 percent who have seen children or adults playing in the stream when the current is fast. Sixty-four percent of the interviewees also reported that use is infrequent (only once or twice a month) within 24 hours after a rainfall. Twenty-seven percent of respondents reported observing children or adults playing in the stream during or within 24 hours after a rainfall. The survey did not characterize the size of the rainfall events after which recreation was observed. Based on the answer to the question about fast or slow currents, people are more likely to recreate during dry weather or after a light rain than a major storm. The evidence collected by the city indicates that recreational use is rare or non-existent during and after large storm events.

5. Unsafe water quality combined with municipal programs that prevent and control access to the water.

IDEM guidance notes that unsafe water quality and municipal programs to prevent and control access may be a factor in determining an existing use:

If the water quality is unsafe and access to the water is precluded by (a) existing impediments to physical access such as steep banks, fencing or high retaining walls, then IDEM will not presume an existing recreational use. In order for IDEM to determine that access is precluded by the municipality, the municipality must take steps to actively prevent adults and children from actually using the water. This requires the municipality

White River

to prevent and control access to the water and to conduct a reasonable proactive outreach media and educational program to prevent actual use during and immediately following a significant wet weather event. This presumption will not apply to recreational beaches open to the public and other swimming areas designated for public recreation. (IDEM guidance, p. 51.)

Information on the city's programs to prevent and control access to CSO-impacted waterways is presented in the introduction section to this submittal. Information documenting unsafe water quality on White River is presented below.

Water Quality: To demonstrate there is no existing recreational use under this factor, the city should demonstrate that recreational water quality standards are not achieved within the CSO-impacted area of White River during storm events. The table below provides a summary of in-stream water quality data collected in the CSO area of White River from 2000-2002 by the Indianapolis Office of Environmental Services and the Marion County Health Department. Results are shown for all data, dry weather data only and wet weather data. The data show that during wet weather, the geometric mean within the CSO area in White River was 561 *E. coli* colonies/100 mL, exceeding the state's recreational use standard of 125 cfu/100 mL. Two-thirds of samples taken in wet weather periods exceed the single sample standard of 235 cfu/100 mL.

White River *E. coli* Bacteria Compliance (CSO Area)

Data Source	Geometric Mean of 2000-2002 data ¹	% of Samples > 235 cfu/100 mL	Total Number of Samples
All Data	238	46.2%	84
Dry Weather Data	99	25.3%	91
Wet Weather Data	561	66.7%	93

⁽¹⁾ Indiana's standard for geometric mean is 125 cfu/100 mL.

To determine whether water quality standards are being met in the CSO area of White River during or after large storm events, the city further analyzed in-stream water quality data collected in 2000-2002. Based upon a NetStorm simulation of LTCP Systemwide Control Plan 1, the city identified 17 storm events that would have resulted in untreated overflows if the city had installed CSO control facilities that achieve 93 percent capture. The city does not have data to correlate to all 17 storm events, since the city's existing sampling program is designed to collect data on a periodic basis without regard to weather conditions. However, on the days when existing 2000-2002 data could be correlated to an estimated overflow event, the data consistently show that the single sample maximum standard of 235 *E. coli* colonies/100 mL is not being met. This demonstrates that the CSO area of White River is unsafe for recreational use during and after those storm events. These types of storm events would have caused overflow events both before and after November 28, 1975, the date after which an existing use must be protected if it has been "attained."

White River

WHITE RIVER COMPARISON OF ESTIMATED OVERFLOW EVENTS AND HISTORICAL <i>E. COLI</i> BACTERIA SAMPLING 2000-2002							
Estimated Overflow Event Date (93% Capture)	Date of Sample	30th St OES (cfu/100 mL)	Morris St OES (cfu/100 mL)	Harding St OES (cfu/100 mL)	Raymond (cfu/100 mL)	New York (cfu/100 mL)	Average (cfu/100 mL)
4/7/00	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5/26/00	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7/4/00	7/5/00	980	20,000	9,909	N/A	N/A	10,300
8/17/00	N/A	N/A	N/A	N/A	N/A	N/A	N/A
9/10/00	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10/4/00	10/4/00	400	1,803	380	N/A	N/A	900
4/10/01	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6/5/01	6/5/01	N/A	N/A	N/A	N/A	410	N/A
7/1/01	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10/10/01	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10/24/01	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4/21/02	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4/24/02	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4/27/02	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5/7/02	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5/12/02	5/13/02	N/A	N/A	N/A	N/A	10,462	N/A
9/20/02	N/A	N/A	N/A	N/A	N/A	N/A	N/A
11/10/02	N/A	N/A	N/A	N/A	N/A	N/A	N/A

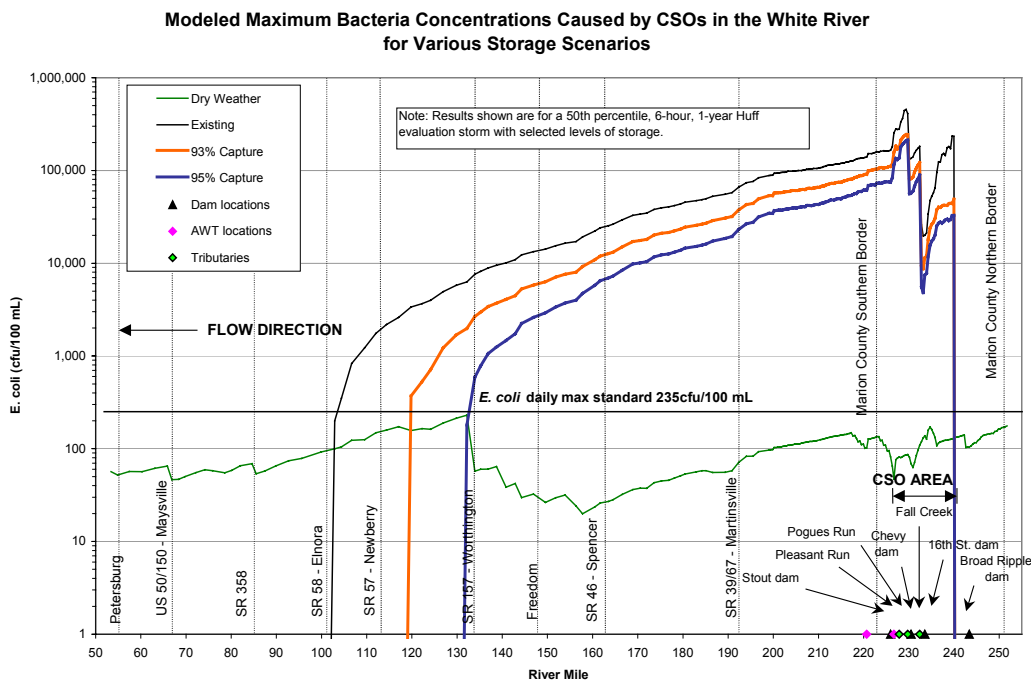
Source: Estimated Overflow Dates: 1950-2003 NetSTORM Simulation for System Wide Plan 1, 93% Capture Level of Control.

Sampling Data: 2000 - 2002 instream *E. coli* bacteria sampling by OES and MCHD.

Note: Sampling data is presented only for dates on or following the estimated overflow event date, and for locations within the CSO area.

Downstream Water Quality: The figure below shows modeled maximum *E. coli* bacteria concentrations in White River downstream of Indianapolis, based upon existing conditions in dry weather and a 1-year storm. The figure also shows conditions resulting from a 1-year storm under CSO control levels of both 93 and 95 percent capture. The modeled analysis demonstrates that the single sample maximum standard is not met as far downstream as State Road 58 near Elnora following a 1-year storm under current conditions. The extent of downstream impacts is expected to decrease during and following implementation of the city's final long-term control plan. The 93 and 95 percent capture scenarios are presented as potential outcomes of the LTCP. However, the final long-term control plan is subject to public input, affordability and negotiation with IDEM and EPA. Nevertheless, the information below is sufficient to demonstrate that recreational water quality standards are not being met in downstream reaches of White River. Combined with the city's public notification programs to downstream communities, this factor supports a "no existing use" determination for White River during storm events exceeding the 1.7-month storm as far downstream as State Road 58.

White River



Summary

Although occasional recreational uses occur along the CSO-impacted areas of White River, these should not be considered existing uses under 40 CFR 131.3(e) based upon the following factors:

1. Physical access and flow that are unsuitable for recreational use during large storm events, such as those exceeding a 1.7-month storm;
2. Waters that are dangerous during large storm events due to swift currents and undertows
3. Limited extent and frequency of actual recreational uses
4. Minimal recreational use during or immediately after significant wet weather events;
5. Unsafe water quality combined with extensive municipal programs to prevent and control access to the water following wet weather events.

Furthermore, the physical and water quality conditions of CSO-impacted areas of White River make primary and secondary contact recreational activities unsuitable, undesirable, and unsafe during significant wet weather events. Based upon this data, we conclude that full-body or partial-body contact recreation is not an existing use of CSO-impacted areas of White River during storm events exceeding the 1.7-month storm. Therefore, we request that IDEM affirm the city's conclusion and allow the city to proceed with a UAA to evaluate the attainable uses of the CSO area of White River during the periods and conditions under which we contemplate having residual overflows.

Appendices:

- A. Physical Stream Survey Maps and Tables
- B. USGS flow graph
- C. White River Recreational Use Map
- D. 2002 White River Use Survey

Reference:

White River

U.S. Geological Survey, 1996. Low-Flow Characteristics of Indiana Streams. USGS Water Resources Investigation Report 96-4128. Page 129.